University News

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Association of Indian Universities
—72nd Annual Meeting

N.C. NIGAM

Presidential Address

Y.K. ALAGH

Inaugural Address

S. SIVARAJ PANDIAN

Courseware Evaluation
—Development of a Courseware Evaluation Form

THE MILLENNIUM MISSION

EXPORT OF ENGLISH PROGRAMME

ELECTRONIC READING CENTRE FOR THE BLIND

MANDATORY APPRENTICESHIP FOR LAW STUDENTS

Association of Indian Universities

UNIVERSITY OF DELHI

DEPARTMENT OF COMMERCE
DELHI SCHOOL OF ECONOMICS

INVITES APPLICATIONS FOR ADMISSION to the fourth batch of the following two full-time two-year (four-semester) professional courses, beginning July, 1998:-

(1) Master of International Business (MIB)

(2) Master of Human Resource and Organisational Development (MHROD)

Eligibility : Bachelor's degree in any discipline of the University of Delhi or an examination recognised as equivalent thereto, with at least 50 per cent marks in aggregate.

Reservation : Reservation for SC/ST candidates and for wards/widows of armed forces and para-military personnel killed or disabled in action, as per University rules.

Relaxation : 5 per cent marks for SC/ST candidates, and for widows, sons/daughters of officers and men of the armed forces including para-military personnel killed during war.

Those appearing in final year degree examination can also apply provided they fulfill the eligibility criterion at the time of admission

Selection : The selection will be made on merit determined on the basis of written test, group discussion and interview.

Admission Test : The common admission test for MIB and MHROD will be held on Sunday, **22nd February, 1998** at 2.00 p.m. at Delhi, Calcutta, Chennai, Lucknow and Mumbai.

The Department reserves the right to change/cancel any test centre and will not be responsible for any postal delay.

Handbook of Information and Application Form can be obtained from the office of the **Department of Commerce, Delhi School of Economics, University of Delhi, Delhi-110 007,** personally against a crossed bank draft of Rs. 100/- (Rs. 120/- through post) drawn in favour of the Registrar, University of Delhi payable at the State Bank of India, Delhi University Branch (Code No. 1067).

The application form complete in all respects should reach **Professor V.S. Minocha, Admissions Coordinator (Professional Programmes), latest by Friday, 6th February, 1998.**

Professor R.N. Goyale
Head of the Department

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Editor :
SUTINDER SINGH

Association of Indian Universities 72nd Annual Meeting

Excerpts from the Presidential Address
by
Prof. Navin C. Nigam, Vice Chancellor, University of Roorkee

The modern university system is now completing 900 years since it was established in Bologna, Italy. During this period it has undergone evolutionary changes in response to emerging opportunities and challenges. The 20th Century stands out as a period during which universities across the world have undergone a major transformation driven by two powerful forces — intellectual and political. As Vice Chancellors we have the unique privilege and opportunity to harness these forces for the cause of higher education.

The Transformation

I would first present a synoptic view of the historical evolution of the university system, and the issues raised by the recent transformation. The social institution which we call a university has endured now for nine centuries by maintaining a delicate balance between tradition and change. It would have been destroyed, either by resisting the pressure to change and so losing its viability, or by yielding too readily to change and losing its integrity. Higher education system has, by its intrinsic nature, a large time-constant. Therefore, the impact of changes in the universities can only be measured over a long time span. The university system has established itself as the world's most durable institution by tempering change with a measure of conservatism. The recent transformation, which has brought in its wake rapid and fundamental changes, therefore, poses a formidable challenge to the integrity of the university system

Over nine centuries there has been an accretion of the functions of a university. In the early phase, the 11th century, the universities trained students in professions, such as, theology, medicine and law. (Bologna, Salerno). In course of time, they expanded to become nurseries for gentlemen, statesmen and administrators (Oxford, Cambridge), and later developed into centres of research and scholarship in humanities, and sciences (Gottingen, Berlin). In 19th century institutions of higher technical education emerged as centres of teaching, research and extension in engineering and technology (MIT, ETH Zurich). During the past few decades management has been added to the repertoire of university functions. However, for most part of the nine hundred years "pure scholarship — disinterested, pursued for its own sake, undeterred by practical considerations or popular opinion" — remained the hallmark of the universities.

In his famous address at Allahabad University Pandit Nehru expressed the time honoured vision of a university in these beautiful words :

"A university stands for humanism, for tolerance, for reason, for adventure of ideas and for search of truth. It stands for onward march of human race towards higher objectives........"

At the turn of this century Cardinal John Henry Newman, the creamake brief remarks on some issues connected with the funding of higher education, and the policy of reservation for admission of students and appointment of teachers.

Funding of Higher Education

The higher education in India is largely financed by the government — central and state. The government share has progressively increased from 49 per cent in 1950-51 to about 90 per cent at present. The government spends about 3.7 per cent of GNP on education of which the share of higher education is about 0.8 per cent. Since 1991-92, there has been a growing reluctance on the part of central and state governments to support higher education. The share of higher education is, therefore, not likely to increase significantly even after the proposed increase to 6 per cent is implemented. With the government assuming almost full responsibility to fund higher education during the period 1947-91, the tradition of societal support to education, which existed when Banaras Hindu University and AMU were set up, has almost disappeared. As a result of the "deficit-funding model", under which revenue receipts, including the fees, are deductible from the grant, the student fees have remained stagnant for the past fifty years, and any significant increase to augment university resources through students fees requires political will. The universities are, therefore, facing a piquant situation.

The position has been considerably aggravated, with long-term implications, by a recent (May, 1997) discussion paper : "Government Subsidies in India", released by the Ministry of Finance, Government of India. The paper has been released to initiate an "informed debate and arrive at a consensus on the overall level of subsidies as percentage of GDP and their appropriate targeting". The paper identifies the support for higher education as a *non-merit subsidy*, and places higher education in the distinguished company of electricity, diesel, fertiliser etc. This conclusion is based on the unfortunate premise that higher education is largely for *private benefit*. The paper further states that "subsidies in higher education are probably appropriated by the middle to high income groups", and has a low recovery rate of 1.74 per cent.

With knowledge and human resources now universally recognised as critical for economic growth, declaring support for higher education a non-merit subsidy has dangerous implications for our future. In her inaugural address at the AIU-UGC sponsored Roundtable held at Indore in June, 1997, UGC, Chairperson Miss A.S. Desai had persuasively argued the case for a review of this perception. She had appealed to the Vice Chancellors to have a wide ranging dialogue on this issue in the university fora to create an "informed opinion". I strongly endorse her appeal.

Equity Through Admissions and Appointments

We are a nation of more than 950 million people. Unfortunately, only about 200 million of them are in the mainstream. Bringing them in the mainstream must, therefore, be high on the national agenda. Recognising the historical disadvantage suffered by a large section of our people, our constitution makers provided reservation to SC/ST for an initial period, which has been further extended. Subsequently, reservation has also been extended to OBC in some states bringing the reservation level to 50 per cent, and in some states even beyond this limit fixed by the Supreme Court. There is no doubt that in the long run this policy will strengthen our nation and bring about shared prosperity to all sections of our people. However, we must save the day to secure a future. It is in this context that we should carefully analyse the academic implications of some aspects of the present reservation policy as applicable to universities. I would like to comment upon two aspects

Student Admissions

The present policy provides for separate merit list and "relaxation" in qualifying marks for reserved category students. These provisions are necessary to give these students a reasonable opportunity for admission. However, the extent to which the "relaxation" may be provided has major academic implications, both for the reserved category students and the academic institutions — particularly those institutions which enjoy high reputation and attract the most outstanding students. Educationally, it is not feasible to cater to a class which has a wide range of academic competence, without lowering overall standards. If the standards are maintained, the students at the lower end of the spectrum of academic competence are unable to cope with the system resulting in high failure rate and loss of self esteem. A bottom line of academic competence, which will vary from institution to institution, is, therefore, a must. This principle has been recognised and implemented in the Joint Entrance Examination (JEE) conducted by IITs, GATE and other entrance examinations. However, a UGC circular (D.O. No. F. 1-6/89(SCT), July 30, 1989), *inter alia*, provides that :

"2(d) It is clarified that in order to fulfil reservation, there should be no hesitation, if necessary, to go the pass percentage of the qualifying examination (e.g. Class XII, for admission to B.A./

> B.Sc./B.Com.; first degree for admission to a second degree or postgraduation)".
>
> "2(e) Considering the ground reality ..... and considering that the availability of SC/ST candidates is relatively less, it is irrational to apply to them criteria like minimum eligibility marks and cut off marks which are much higher than the pass marks in the relevant qualifying examination .. .. "
>
> "8. Some universities have the procedure of holding entrance tests for certain courses.... In the case of SC/ST candidates, admission should be made in order of merit subject here too to the principle at 2(e). ... The qualifying examination is the examination which the candidate has passed at the lower level of education and has already qualified in a duly conducted qualifying examination, the purpose of Entrance Test is only to arrange the candidates in *inter se* merit...."

A literal interpretation of the above provisions makes it a requirement that an eligible reserved category candidate must be admitted irrespective of performance in the Entrance Test Academically this has serious implications both for the reserved category candidates and the academic institutions — particularly the centres of excellence In IITs which admit nearly top 1 per cent students through JEE, reservation for SC/ST was introduced in early 70s, without a lower cut-off. The result was disastrous with many students failing to cope with the system and dropping out, and some committing suicide Analysis showed that through unconstrained admission we have converted the success story of many students, who were the first to pass 10+2 in their family, into a tragic failure Recognising this, the admission policy was reviewed and a lower cut off introduced which is being implemented. Besides UGC, respective state governments have laid down guidelines for reservation in the admission of SC/ST and OBC candidates, which are some time in conflict with UGC directions. The UGC guidelines ignore these realities and there is an urgent need for a review.

Appointment of Teachers

The appointment of teachers in universities and colleges is also covered by the reservation policy guidelines of the UGC and the state governments. The UGC guidelines laydown reservation of 15 per cent for SCs, and 7 1/2 per cent for STs for appointment at Lecturer level only Many state governments also include reservation for OBCs, and at all levels, taking the reservation to 50 per cent or more Reservation for students, with some constraints, is fully justified. However, for teachers who determine the future of a generation of students, reservation is not advisable on academic grounds. With students of a wide range of academic competence, we need the best of teachers. Speaking at a convocation, the President of Columbia University said : "Good teachers destroy good universities, what we need are the most outstanding........". The impact of reservation in the appointment of teachers is compounded by the fact that qualified candidates are not available resulting in a large number of vacancies across the universities. In my university, only 37 applications have been received against 89 posts advertised recently for reserved category teachers. A large number of teaching posts are vacant and are likely to remain so, overburdening the existing teachers and seriously impairing the quality of teaching and research. Similar situation exists in a large number of universities. The Research Division of AIU is conducting a study on the impact of reservation policy in universities and colleges Academic institutions are akin to living organisms, once afflicted by a serious disability, recovery is often beyond redemption. A serious national debate on this issue is called for keeping in view the special needs of academic institutions, and our shared experience

The Present Dilemma

I would like to conclude my address by paraphrasing the opening lines of the famous novel *Tale of Two Cities* by Charles Dickens which so aptly characterises the dilemma faced by us all today :

> "It was the best of times, it was the worst of times, it was the age of wisdom, it was the age of foolishness ... it was the season of light, it was the season of darkness, it was the spring of hope, it was the winter of despair ..... "
>
> In this vein, the milieu in which we are functioning today may be summed up as :
>
> *At a time when* knowledge and human resource are universally recognised as critical to economic development and are being generously supported in developed countries, we face the spectre of higher education being declared a *non merit subsidy*
>
> *At a time when* industry has been deregulated and academic institutions are expected to function as entrepreneurial organisations, we continue to struggle to perform under government rules, regulations and bureaucratic controls.
>
> *At a time when* leadership in the world is being

achieved through strategic support to pace setting institutions, we are not providing necessary conditions for sustaining such institutions.

At a time when universities and industry are forging innovative alliances in developed countries to achieve synergy, industry in India continues to look up to the universities to deliver human resource on the tap, without a sense of partnership in the process of education and research.

At a time when material progress is raising complex questions of morality, ethics and social behaviour, we are facing a decline in the enrolments and support for humanities and social science programmes in our universities.

As Vice Chancellors we are in the thick of this dilemma, and it is our predicament and the challenge to respond to these times

Excerpts from the Inaugural Address
by
Prof. Yoginder K. Alagh, Union Minister of State for Science & Technology

Our education is at cross roads. State funds are drying up Socio-political processes discourage structural reform. We need to initiate new ways of reasoning and action Some recent policy changes in the science and technology sector may be of interest Science education is of course a major area of concern

A very interesting aspect of the Indian experience is that Indian scientists have generally responded well to well structured science and technology initiatives When the goals have been clear, and support mechanisms in terms of organizational strength and resources assured on a reasonable basis, performance has been excellent Take recent examples In 1989 when the policy of selective import of seeds was announced, Dr R.S Paroda was able to get an assurance from Rajiv Gandhi that in selected crops, Indian agricultural scientists would get support for mission oriented projects. The successful development of Hybrid Paddy by Dr Siddique's Group was the result. Also for castor similar results were achieved The commissioning of the Kamini Fast Breeder Reactor at Kalpakkam is an important step in completing the complete fuel cycle on our almost unlimited thorium reserves The stationary testing of the cryogenic engine for the GSLV at Mahendragiri is another example Many more are there

It is not accidental that science and technology policy is a major area of concern in many countries President Clinton had commissioned a major statement on the subject Most major countries like Japan, France and Italy have considerable work and policy initiatives in the area. The same trend is now clear in many fast growing developing countries. We are planning to bring out a Technology Policy Draft for adoption.

Science & Technology, therefore, has a major role to play in the emerging context of globalization and competitive economy and in view of the new demands that are being placed on the S&T system. As the 8th Five Year Plan is coming to a close and preparations are being made for the 9th Five Year Plan, it is increasingly clear that in the field of basic research in science & engineering and associated higher educational system our goals will have to be shaped by strengthening the range and depth of our scientific and technological capabilities which in turn can only be achieved and sustained on the solid foundation provided by high quality basic research and a truly responsive and interactive educational system. We have to strengthen our technology development base with particular emphasis on ensuring partnership with industry and techno-economic sectors Indian industry derives much of its strength from the higher educational system and has a major role to play and to look upon technology as an equity, one that cannot be divested, and as a fountain head of industrial development Therefore, industry initiative ought to constitute one of the driving forces for technology development and thus build on the wide and strong S&T institutional and higher educational base created thus far.

I have been fascinated by a recent example *Tata-IBM* have set up a Research Centre at the IIT, Delhi There are three very interesting features of this event The first is that this is a *Research* and not a Research and Technology Development Centre, set up by *IBM* The second is that outside the U S A , IBM has only three such Centres in Japan, China and Israel and the Indian Centre is the fourth The third is that a very promising young scientist of Indian origin is returning to head it and during the Ninth Plan about US $35 million, will be spent on the project

In the information and software area, a combination of policies is now nearing acceptance. When the details were examined, it was seen that India has very substantial reserves About 45,000 Kms. of optic network is there in the Telecommunication Sector In addition, the Railways and the Power Grid have substantial capacities. The new policy announcements made, provide for a combination of State and much larger private initiative to utilise these facilities Private investment in gateways and in users' services have been provided for in an extremely investor friendly model. The interest of the education sector in Ernet would be protected Training is considered another important platform of the policies for the information and electronic sector. More than two-thirds of the electronic work force consists of specialised workers with science and technology but not of electronic degrees. Skills are picked up by special courses and work experience. It is proposed to considerably strengthen these mechanisms. The Department of Electronics Credit and Accredition Systems (DOECAS) has recently produced a user friendly self-teaching cassette and CD Rom and disk with which any student can self-programme himself or herself to get the O-Level Certificate. I am happy that the Electronics Secretary has acted on my advice and provided fellowships for poor (SC/ST) students to get admission to the IBM training programmes. Training the poor boys of today for the jobs of tomorrow is the most important equalising measure that we can think of. However, we also propose to set up state-of-the art facility for training at the frontiers. I have already noted that the IBM has put up its research centre at the IIT, Delhi. We propose to network our major institutions like the Institute of Computing Technology, C-DAC and others to be at the cutting edge of research and training in this field on a global basis. At the level of aggregate sectors, it is the electricity sector which has shown the fastest growth of 7 to 8 per cent from June through November Now power plants are backing down since manufacturing and other sectors are stagnating. But within the manufacturing sector, the electronic sector is growing at very rapid rates and the current software exports level at over $ 1 billion is going to double this year to $ 2 billion The sector is growing at 50 per cent plus growth every year. The other major focus of the training programme is to involve schools in computerisation and data networks. Finally, as our literacy levels pick up the translation language interface on computers is going to be a key for growth

We propose to provide the technological back-up to the faster industrial growth of the Indian economy in an increasingly open framework. Last year's Budget contained Rs. 3000 million for a Technology Development Board and I have been able to pursuade my friend Dr. Ashok Ganguly, former Chairman of Hindustan Lever, now a member of the Board of Levers International to be a member of this Board. It also includes a distinguished scientist, an agricultural expert and an economist. The Board funds projects which provide private sector joint investment and participation and which are expected to have large ripple effects on the economy. The Board has already started functioning. Industry associations and industrial groups have already shown keen interest in making use of these opportunities.

We persuaded the Union Finance Minister to include in his Budget speech last year an innovative Rupee for Rupee Scheme for India's substantial government research laboratories and technology institutions It may be recalled that in the early Fifties, we had set up a Council of Scientific and Industrial Research which by now has around thirty major National Laboratories covering a very vast spectrum of possible support for societal, infrastructure and commercial applications. These laboratories work basically with autonomous research programmes and there have been complaints in the past that they had no incentives to relate with business practices and growth This has changed in recent years and CSIR has a new vision of the need to achieve global excellence through competitive processes to the organisation Under Rupee for Rupee Scheme every rupee earned by any one of the CSIR laboratories would be matched by a rupee from the Government so that they can invest in their modernisation programme for achieving their worthwhile objectives over which they will have full autonomy. A good beginning was made by CSIR laboratories last year. A number of companies are taking advantage of this.

I would specifically like to mention about a recent initiative taken by a private company which has developed and marketed a commercially viable technology for r-DNA base vaccine for Hepatitis in India Government has encouraged the company by extending financial assistance with the twin objective of encouraging the industry and also fulfilling the need to have easy availability of such vaccines within the country.

Dr. Abdul Kalam, who is a house-hold word in India, is the man who has crafted our missile programme. He is also an extraordinarily cultivated, sensitive human being and a great technologist. He led Technology and Business groups in 18 different areas ranging from civil aviation to milk and had produced an excellent Vision 2020 document. These detailed steps that have to be taken last year, the next 3 to 5 years and in a long term Vision 2020, to make Indian technolgy globally competitive in each one of the priority areas. In many sectors the required research is interdisciplinary since most modern technologies include mixtures of areas like biotechnology, computerization for systems and productivity improvement and modern communications and modern materials.

All of this will mean a scientific culture which is increasingly integrating itself with production processes and networking with economic and social groups. During the near future, we propose to walk on two legs. In addition to the schemes that I have described, we will fund higher education and development of state of the art skills and research. We propose to keep up the emphasis of generation of high quality human development skills in the scientific and technological fields. This will be particularly so in modern areas like biotechnology, where we have a substantial HRD component, computerisation and basic sciences.

The two track approach is also increasingly the vision in some of India's hi-tech sectors The Space Department's vision for the future apart from its original emphasis on exploration of space is also including increasingly commercial sale of services ISRO has set-up a small American subsidiary which is successful in its commercial set-up in selling high resolution satellite imagery and pictures of world class standards particularly for regions where such data is not easily available. On a recent visit to a friendly Central Asian Republic, I was pleasantly surprised when the President turned to me and said that he was noticing that American business visitors, came with pictures delivered to them from Indian Satellites of his country's potential mining and resources development areas ISRO also will go into the whole areas of satellite transmission for entertainment in a commercial way. The Indian Nuclear Energy Programme has established itself and by now the teething problems of the German Technology that we had borrowed and adapted in the Eighties are over. Plant load factors, of nuclear power plants are running close to design levels and are becoming a real economic option in regions where hydel power is not available and for which coal has to be transported from large distances. The Department of Biotechnology has decided that it has now to move over from its initial promotional phase to a more operational phase where networking, adaptive projects and R&D programmes can help in leveraging much larger output in fields like immunological and drugs, genetic engineering for animal husbandry, herd management, agriculture and friendlier pesticides and fertilizers At Gual Pahari in Haryana, TERI has with DBT support commissioned one of the largest tissue culture plantlet facilities for tree crops in the world Now a set of S&T Parks are to be set up to train entrepreneurs to disseminate the product. These are interesting partnerships of science for growth.

India has to keep up in frontier areas of science. A corpus to fund research projects in frontier areas of science proposed by outstanding scientists of any age has been created. More important however university science needs urgent attention. While this is primarily the responsibility of the Ministry of Human Resource Development, the Department of Science and Technology must also help in the creation of a suitable environment and policies for scientific research in the university system.

Outside select institutions like the IITs, there are pioneering groups which are thinking along lines of solving some of the problems given below, which need our immediate attention. Many of them network with local industrial bases, existing R&D and science think tanks and official bodies. However, we have as yet not fully organized ourselves to support such initiatives in a quick and replicated manner Recent problems identified in serious restructuring exercises done for science education in India have been listed as follows

1. Multi-institutional integration need to be strengthened to achieve excellence both in basic as well as applied research.
2 Confidence building towards one another among industry, academic and research institutions.
3. Adaptation of technologies to meet the user-needs, their practices and local area resources.
4. Application of appropriate technologies in the developing process to overcome the conventional infrastructure.
5. Reorientation of science and technical education to make it immediately professionally useful and competitive.
6 To attract young talent to the study of science in the face of increasing competition for talent in other sectors of economy.
7. Updating the infrastructure facilities in academic and institutions for study of science and also reorienting science education considering natural environment of the students.
8 Application of science and technology to improve quality of life and inculcating scientific temper creating awareness on ecology, environment and health related issues.

9 Forecasting technology needs and corresponding disciplines in education curricula to meet the emerging challenges of competitiveness and denial of technologies

10. Modernisation of organisations providing scientific services such as Survey of India, India Meteorological Department, Accreditation Laboratories, etc

11 To spread patent literacy upgradation of related facilities

12. Pursue international collaborations as necessary to meet the above concerns

Science policy advisory and operational structures are being revamped. A Scientific Advisory Committee to the Cabinet chaired by a distinguished scientist has been set up This will provide the vision and policies for Indian Science and Technology A Cabinet Committee on Science and Technology has been set up to operationalize this vision in terms of policies and a Committee of Secretaries to implement it

There are a number of universities which are thinking of innovative science education programmes. I would, in particular, like to mention Prof Govadanikar's initiative in involving local institutions in state-of-the art undergraduate science teaching programme in collaboration with the high-powered science, technology and management institutions in the Mumbai, Pune area including TIFR, the Centre for Astrophysics, Pune University, the School of Planning and others This programme involves industry and is modelled along some of the finest courses that are being thought of anywhere giving students considerable flexibility in designing his or her education In spite of my best efforts and the Prime Minister's directive to the Secretary of the Department of Science and Technology to support the programme, we are facing difficulties in inter agency turf battles to resolve the problems I hope the Vice Chancellors will give clear cut signals to avoid these problems in the future. Resource shortage is not the question here. The more important issue is networking, restructuring and helping those who can help themselves

I had started a Career Advancement Scheme when I was Vice Chancellor of Jawaharlal Nehru University Former Chairman of the University Grants Commission Prof. Ram Reddy had blessed this Scheme It has received much criticism My argument before the Rastogi Committee was that any restructuring requires that jobs should not be expanded and support facilities in terms of libraries, research and so on should be. But it also requires those who have merit are recognised and rewarded in periods when new jobs are not there and a Career Avancement Scheme is the best method of doing this. After implementing the Scheme in JNU, I had seen to it that highest standards are applied Critics don't mention that in the JNU a number of persons who were interviewed for senior positions were also rejected by peer group selection processes. I am very happy that the Rastogi Committee has seen the merit of such a Scheme and according to the newspapers' reports UGC has sent it to the Ministry of Human Resource Development. I hope we will accept these innovative proposals

Concluding therefore I would say that the need for structural reform in the educational sector is paramount Somehow or the other, we attend to these priorities late However, nothing has been lost as yet. It is extremely important that the higher education sector becomes a leading sector as we enter the next century Education was at the heart of the Indian Freedom Movement and was a very important part of economic development in the first half of the century. All studies show that return to it is high. I hope we will chart out the path for making knowledge as the main engine of growth as we enter the 21st century

University News

Wishes

Its Readers

A

Happy New Year

1998

Courseware Evaluation

Development of a Courseware Evaluation Form

S. Sivaraj Pandian*

Introduction

The basic criterion for good computer-assisted instruction (CAI), as Caffarella (1987) asserts, is that the software should have the ability to teach. The students' knowledge and/or behaviour should undergo a positive change as a result of using software. Software/courseware are synonymous terms used frequently and interchangeably in educational settings However, when a software package is used largely for classroom instruction and information relating to curricular subjects for teaching-learning purpose is contained therein, it is known as courseware. Spille et al (1985) further explain that courseware is software used in instructional programming that is part of a course or learning programme. Courseware may include various mechanical devices (discs, tapes, computer programmes); and may also include training manuals and correspondence course guides, or comparable printed materials designed for use in conjunction with hardware.

From day one, computers are utilised for instructional delivery at classroom level. After identifying its potentiality in tremendoulsy enhancing students' learning and formation of concepts both qualitatively and quantitatively, the need of computer courseware packages to augment the classroom instruction were realised by educators and teachers, of which the latter are faced with the difficult task of selecting microcomputer software for classroom use The dramatic increase of microcomputers in schools in recent years has been mirrored by a tremendous proliferation of educational software (*Jolicoer and Berger,* 1986) The quality of educational software has improved over the past several years as developers have taken the advantage of increasing computer capabilities. Unfortunately, these technical advances have not been able to create the theoretically sound and educationally valid software to the extent needed. (*Schwarz and Lewis,* 1989). The courseware which are available in markets are without a conceptual background of instructional design. Poorly developed courseware materials used in teaching of concepts, rules and other educational skills contributed to the rapid decline in the quality of CAI. Thus, as Jolicoer and Berger (1986) realised, educators who are responsible for selecting microcomputer courseware for classroom use are faced with a difficult task due to vast array of coureswware leaving many an educationist/educator in a quandary as to how best to select the most appropriate programmes for their classrooms.

Becoming a Courseware Selector

Courseware selection is an arduous task. To judge the quality of a courseware package for classroom use a teacher, educator or administrator should keep in mind the criteria. Blease (1986, 58-59) lists as under :

1. *Basic housekeeping* · The selector must know the rudimentary skills such as the setting up of the hardware, loading and running the programmes, making of backup copies of tapes or discs, the protection of files from accidental erasures etc;

2. *Range of educational programmes* : Since computer is a versatile learning aid, the selector needs to have experienced the full spectrum of educational programmes such as drill and practice, tutorials, simulation and some experience of a programming language like LOGO,

3 *Curriculum objectives* : The selector must have a clear idea about subject matter and the curriculum objectives which enable him to choose suitable courseware package for classroom purpose;

4 *Technicality of the courseware* : Besides knowing how to run the courseware package, the various types of educational programmes and curricular objectives, the important element to be considered is to select and evaluate the courseware package before using it. In other words, the selector must know the educational and technical strengths and weaknesses of the courseware.

However, to make courseware effective in reading instructional objectives, Jolicoer and Berger (1986) suggest some guidelines. Firstly, educators must know which factors to consider if they are to be successful in selecting appropriate and effective courseware for their classroom. Secondly, software

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**Lecturer, Department of Education, Arunachal University, Itanagar-791 111* developers also need information on factors associated with effectiveness if they are to improve the quality of future courseware. Finally, those who review courseware need to know how specific programme characteristics influence effectiveness in order to develop valid education measures that accurately predict the educational values of the courseware.

Characteristics of a Good Courseware

Educational technologists specialised in CAI have delineated certain characteristics, and qualities of a good software. Nakhieh (1983) identifies important criteria for a good courseware :

1 The material should be self contained with simple instructions, and capable of being used directly on the microcomputer without prior training;

2. Prompts should be used liberally so that students can negotiate through the programme with the least amount of effort and confusion;

3 A well written instructional programme should be reasonably user-friendly for effective use;

4 In problem solving situations, the courseware should display the correct methods of solving the problem for students who encounter the courseware briefly. For those who are unable to follow, the correct solution alongwith a step by step procedure should be presented;

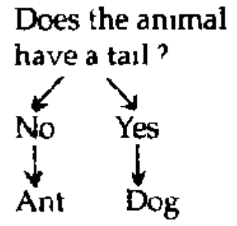
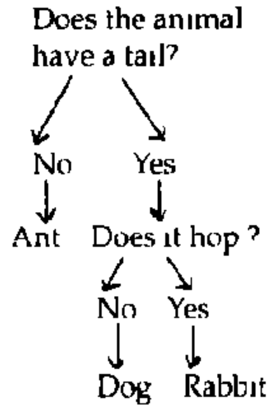
5 The educational objectives of the courseware should be defined and the materials should adequately meet those objectives

6 Readability of the video display is important particulalry in instructions fitted into a small space;

7. The courseware should take advantage of the unique capabilities of various computers,

8. Each courseware should be accompanied by a readable, detailed manual of instructions so that little time is wasted in putting the package to use (*Trowbridge and Bybee, 1990, 186-190*)

Given below is a brief example how a typical courseware has been programmed to deliver a content. The human-computer interaction of this program is applied to animal classification (*Davis*, 1982).

Computer	*Human Interaction*	*Computer Model*
Computer's initial question	Does the animal you want to classify have a tail?	Chain initialised in program
User	[Yes]	
Computer	[Is the animal a dog?]	
User	[No]	
Computer	[What is it ?]	
User	[Rabbit]	
Computer	[What question should I ask so that I can tell a Rabbit from a dog?]	First increment  Does the animal have a tail? No Yes Ant Does it hop ? No Yes Dog Rabbit
User	[Does it hop ?]	
Computer	[I understand Would you like to try another animal?]	

Here, the characteristic features of the animals which distinguish it from other animal and also isolates them by characteristics, help the computer aided learner in identifying and classifying animals.

Criteria for Courseware Evaluation

Educational technologists specialised in CAI focused their attention on courseware evaluation in recent years Courseware evaluation encompasses a wide range of criteria The criteria set for courseware evaluation varies depending upon the perception of CAI specialist and also upon the nature of courseware. There are a good number of courseware evaluation instruments available for this purpose. The following are the guidelines, suggestions and criteria set to meet the procedures for courseware evaluation.

Coburn et al (1982) suggest that four broad areas of concern to be taken into account when evaluating a courseware package are :

1 *Content*. the suitability of materials for the students, the objectives, and the accuracy and significance of the content,

2. *Pedagogy* : The nature of a courseware's feedback, the courseware developer's assumptions of learning and the types of learning modes used;

3. *Package operation* . The control that users have when using the package, the quality of package, and the quality of documentation; and

4. *Student outcome* : The degree to which students learn what the package intends to teach, and the effectiveness of the package compared to non-computer-assisted instruction in the same area.

Schwarz and Lewis (1989) select a series of criteria related to the design and purpose of the microcomputer courseware under investivation :

1 the integration of those known factors which are true regarding good instructional practice,

2 the integration of those known factors which are specific to the instruction of basic concepts; and

3 the investigation of those which relate to the use of microcomputer as a tool and exploit its potential as a 'teaching machine'.

The following are the basic criteria set by Bullough and Beatly (1987, 89) to evaluate a courseware .

1. content

2 running the program

3 major strengths and weaknesses of the package

Blease (1986, 73) in his book *Evaluating Educational Software* recommends the most commonly used criteria to evaluate the effectiveness of a courseware

1 documentation

   (i) technical

   (ii) program information,

2 presentation and layout,

3 friendliness and flexibility;

4. achievement of stated aims; and

5. robustness

The MicroSIFT courseware evaluation form provided by Educational Products Information Exchange (EPIE) from the Northwest Regional Educational Laboratory evaluates a courseware from the statements based on the following characteristics

1. content characteristics

2. instructional characteristics

3. technical characteristics (*Bramble and Mason,* 1985)

Chang and Osguthorpe (1987) developed 'the Educational Software Evaluation System' It is, as they claim, a self instructional guide containing statements pertaining to the following characteristics ·

1 accuracy and value of the content,

2. effectiveness of instructional design;

3. appropriate record-keeping and management function, and

4 ease of use.

Fetter (1984) elaborately discusses guidelines for evaluation of computer courseware and comes up with the following recommendations :

1 appropriateness;

2 content;

3. organisational and technical components;

4 technical (or) teacher's manual,

5 evaluation, and

6 products

The American Council on Education (ACE) has developed a 'Courseware Evaluation Checklist' for use by teams of faculty members evaluating training course and programmes for its Program on NonCollegiate Sponsored Instruction (PONSI) (*Spille et al,* 1985). The Checklist contains evaluative questions on eleven broad categories viz

1 general questions;

2 instruction,

3 sequencing,

4 records/security,

5. instructors role,

6 feedback,

7 user control,

8 graphics/sound,

9 narrative displays,

10 flexibility, and

11 integration.

Duquette (1985) reports a courseware evaluation instrument which was developed, field-tested and revised before being used in the formative evaluation process This instrument containing statements is composed of eight dimensions ·

1 objectives and pretesting;

2 content;

3 questions;

4. post tests;

5. technical aspect;

6. workbook;

7. instructional supervisor; and
8. general aspect.

In their exhaustively prepared statements for the courseware evaluation, Schwarz and Lewis (1989) organise the criteria under three steps as .

Step 1 : Teacher Review Manual

- (i) documentation
- (ii) educational issues

Step 2 : Teacher Review of Courseware

- (iii) programme overview/user interface
- (iv) programme overview/all CAI approaches
- (v) design/all CAI approaches
- (vi) design/tutorial approaches
- (vii) design/drill and practice approach
- (viii) design/game approach
- (ix) design/instructional simulation approach
- (x) learner performance assessment (tutorial or drill and practice)

Step 3 : Learner Review of courseware.

Inference

After going through the literature on courseware evaluation and analysis of a wide range of courseware evaluation instruments, it was possible to draw a few conclusions.

At the outset, it could be stated that the criteria set for the evaluation of a courseware varied considerably among courseware evaluation experts

Secondly, in the case of certain instruments the number of statements used for courseware evaluation was rather limited and hence, provided an incomplete evaluation of its manifold dimensions.

Third, some instruments in use were too lengthy to evaluate a courseware, some of these ran into several pages, while others were too technical to follow.

Moreover, most of the courseware evaluation instruments were conceptually developed on theoretical implications and lacked research procedures e.g. field-testing etc.

It was found that the response formats of the statements/items of most of the courseware evaluation instruments were too simplistic (e.g. Yes/No).

Again, a uniformity in evaluation procedures even within a courseware evaluation instrument was found lacking

Several evaluation instruments lacked scoring procedures, lack of specificity in scoring systems for quality rating of the courseware.

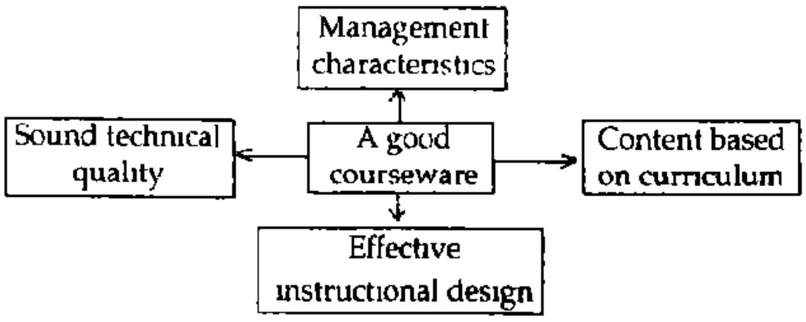
In the case of evaluation instruments these appeared to not have taken into consideration, the characteristics/features lacking in a courseware over its quality rating.

In numerous courseware instruments negative scoring was not used

In total, the available courseware evaluation instruments were found inadequate in terms of systematicness, comprehensiveness and in terms of ease with which they could be used by evaluators and teachers It was found that the available instruments failed to satisfy these theoretical considerations and lacked a few important dimensions of courseware evaluation being incomplete in one way or the other and it was extremely difficult to select a courseware evaluation instrument which fulfilled all the requirements Therefore, construction of a new courseware evaluation instrument was inevitable This new instrument, ideally would be devoid of all the shortcomings of available instruments for courseware evaluation and would reflect the judgement value ratings over the effectiveness of the courseware packages

After discussions with educationists, supervisors and CAI specialists, the following criteria were delineated for courseware evaluation

1) *The description of courseware*
    - i) the features of courseware,
    - ii) target groups etc ,
2) *The evaluatory criteria of courseware*
    - i) content characteristics
    - ii) instructional characteristics
    - iii) technical characteristics, and
    - iv) management characteristics


Management characteristics
Sound technical quality
A good courseware
Content based on curriculum
Effective instructional design

1. *The description of courseware*
    - i) *The features of courseware* : The modes of instruction through various forms such as drill and practice, tutorial, simulation, modelling, testing etc.
    - ii) *The target groups* : Whom the package is meant for i.e. the beneficiaries from instruction such as learners from primary and secondary levels, non-formal education etc.
2. *The evaluatory criteria of courseware*
    - i) *Content characteristics* : The presentation of content looked into the following aspects such as
        - (a) the appropriateness of content,
        - (b) statement of instructional objectives,
        - (c) extensive use of examples and illustrations to clarify content etc.,
    - ii) *Instructional characteristics* : The methods, strategies etc focused upon delivering the content were considered as follows :
        - (a) logical presentation of the content,
        - (b) students' previous learning experience,
        - (c) motivation,
        - (d) ability levels of students,
        - (e) self-pacing,
        - (f) feedback etc
    - iii) *Technical characteristics* · Some techniques used in enhancing the learning competencies of students as
        - (a) screen display of content,
        - (b) graphics/animation,
        - (c) music,
        - (d) manual and user-support materials etc.
    - iv) *Management characteristics* . Dealt with evaluation characteristics and record-keeping
        - (a) formative and summative evaluations.
        - (b) record-keeping of learners' performance,
        - (c) generation of assignments etc.

Construction of Test Items

The following steps were followed in constructing items for the courseware evaluation form (CEF).

Development of items

A set of questions which on the face of it seemed to measure the relevent concepts were selected to reflect orientation to the courseware evaluation. A total of forty items encompassing the four criteria were submitted to educationists and experts of educational technology and CAI. They were requested to judge the items in terms of

(a) whether any important aspect of courseware evaluation was left uncovered;

(b) whether the items were relevant and suitable for realising the objectives of the study;

(c) whether any of the items could be improved by rewriting; and

(d) whether some new items needed to be added (*Pandian, 1995*).

Review, post review modification and tryout

The experts after identifying the instructional purpose, goals etc and the necessary qualities required for an "inspiring" courseware started reviewing the items Experts were asked to express the extent of their agreement and/or disagreement with the relevance of items. After reviewing and post-reviewing the number of statements were reduced from forty to thirty and distributed as follows ·

i) content characteristics — 8 items
ii) instructional characteristics — 11 items
iii) technical characteristics — 6 items
iv) management characteristics — 5 items

As experts suggested, "open-ended" questions were included at the end of the CEF to enable the courseware evaluators to identify overall strengths and weaknesses of the courseware subjected to evaluation The modified CEF was then taken for tryout. A few school teachers and teacher educators were asked to respond to the CEF to discover deficiencies and ambiguities, if any. This was done after training them in courseware evaluation. After try-out, the elicited responses were used to develop the final form of the CEF Items that appeared ambiguous to respondents were recast

Scaling and scoring procedure

The selected items were followed by likert response categories ranging from strongly disagree (SDA) through strongly agree (SA). The midpoint of the scale represented a neutral position of neither agreement nor disagreement i.e. undecided (UD). The scoring pattern for response format was made on a five point scale viz, strongly agree, agree, undecided, disagree, strongly disagree with scores 2, 1, 0, -1 and -2 respectively. It was felt by experts that the features or characteristics which were not properly designed in a courseware subjected to evaluation would be assigned the score 'O'. It is obvious that learning would be misleading due to defective learning materials and mundane presentation. It was felt that if the characteristics/features very essential for a courseware were not properly presented and were not upto the expectation of user, such courseware would prove confusing rather than serve any useful purpose. Keeping this in view, the experts awarded -1 and -2 scores to the features of courseware not upto the mark and falling in the response categories of disagree and strongly disagree during evaluation. However, if some features were completely lacking in a courseware they were subsequently interpreted on "not applicable (NA)", an additional category put on the five point scale. The response to the category "NA" had also got the weightage on the rating of the courseware.

Interpretation of score

The score range of courseware subjected to evaluation, using the CEF would fall between +60 and -60. The obtained score of a courseware package on the scale value = the difference between the summated positive score and the summated negative score The interpretation of the obtained score of a courseware subjected to evaluation for its worthiness for classroom use is as follows ·

Score range	*Quality rating*
45 - 60	use with full confidence
30 - 44	use with less confidence
15 - 29	use with caution
14 and below or More than 7 NAs	reject

Effectiveness of the CEF

The courseware to be used for the research study was subjected to evaluation using the CEF to identify the fitness of the courseware for classroom use directly and to find out the consistency of the CEF indirectly. The reliability of the CEF was to be identified. Reliability refers to the consistency and stability of the tests or scales that a researcher uses, or to the consistency between observers. The reliability of the CEF was analysed by repeated assessments of the courseware using the CEF i.e. the test-retest method — A test — retest reliability coefficient obtained by administering the same test on two different times would determine the reliability of the CEF.

The consistency in the effectiveness of the courseware subjected to the research study was considered as index for the reliability of the CEF. The package to be used for the study was developed by "Aarakis Technologies Inc , Montreal, Canada". The name of the package was "Aarakis Advantage Secondary School Series : Biology, Volume 3 : Reproduction and Development". A total of twenty samples, ten CAI experts and ten biology teachers of secondary level were selected to evaluate the above-mentioned courseware. The biology teachers were trained in courseware evaluation procedures prior to evaluation of the courseware. All the respondents were asked to evaluate the courseware using the CEF. The same respondents were asked again to evaluate the same courseware using the CEF after a gap of fifteen days The calculated reliability co-efficient of the courseware was .82. This value could be considered as an index of the consistency of the CEF.

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COURSEWARE EVALUATION FORM (CEF)

Date :

Name of the Evaluator :

Designation :

Address :

Title of the Courseware Package :

Grade level(s) of Learners (Check ☑ as many as apply) :
- Primary ☐
- Middle ☐
- Secondary ☐
- Sr Secondary ☐
- College ☐
- Non-Formal ☐

Nature of the Courseware (Check as many as apply) :
- Drill and practice ☐
- Tutorial ☐
- Simulation ☐
- Problem Solving ☐
- Modelling ☐
- Game ☐
- Testing ☐
- Demonstration ☐
- Others (Specify) ☐

Please use the scale below to respond to each statement after you have viewed the courseware package.

Check ☑ the response, which you feel appropriate, given against each criterian of the CEF.

Response format	*Abbreviations*
Strongly agree	SA
Agree	A
Undecided	U
Disagree	D
Strongly Disagree	SD
Not Applicable	NA

I. Content Charecteristics

1. The content of the package has educational utility SA — A — U — D — SD — NA
2. The behavioural objectives of the content are simple and clearly stated SA — A — U — D — SD — NA
3. The content is appropriate to realise the objectives SA — A — U — D — SD — NA
4. The content of the package is similar to the content of syllabus SA — A — U — D — SD — NA
5. The content is free from errors SA — A — U — D — SD — NA
6 Suitable examples are given to reinforce the concepts of the content. SA — A — U — D — SD — NA
7. Illustrations and explanations given in the package help students understand the content SA — A — U — D — SD — NA
8. The package provides references for student's further learning SA — A — U — D — SD — NA

________________ for official use ________________

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II Instructional Characteristics

9 The package motivates learners effectively SA — A — U — D — SD — NA
10 The package integrates with the students previous learning experience SA — A — U — D — SD — NA
11. Presentation of the content is clear, sequential and logical SA — A — U — D — SD — NA
12 The package presents diversified instructions to the students of different ability levels SA — A — U — D — SD — NA
13 Learner can control the package i e self-pacing SA — A — U — D — SD — NA
14 'Help' procedure is incorporated and can be accessed at any time while running the package SA — A — U — D — SD — NA
15. Unwanted content of the package can be skipped, if desired SA — A — U — D — SD — NA
16 The package appropriately handles a wide range of students responses SA — A — U — D — SD — NA
17 The package can be stopped as desired, and restarted from the same place SA — A — U — D — SD — NA
18. The package effectively presents feedback on learner's responses SA — A — U — D — SD — NA
19 The package achieves its defined instructional purpose SA — A — U — D — SD — NA

________________ for official use ________________

____

III Technical Characteristics

20. The screen display of the content is well designed and effective for learning SA — A — U — D — SD — NA
21. Graphics and animation are appropriately used and reinforce concepts SA — A — U — D — SD — NA
22. 'Music' presented with learning motivates students SA — A — U — D — SD — NA
23. Manual and user-support materials of the package are useful SA — A — U — D — SD — NA
24. Learner can independently operate the package SA — A — U — D — SD — NA
25. 'Exit' function is designed and can be effectively used SA — A — U — D — SD — NA

______________________ for official use ______________________

IV Management Characteristics

26. The package contains formative and summative testings SA — A — U — D — SD — NA
27. The test items are simple and reflect the values of the content SA — A — U — D — SD — NA
28. The package evaluates and reports learner's diagnostic progress SA — A — U — D — SD — NA
29. The package displays learner's record SA — A — U — D — SD — NA
30. The package generates assignments for learners based on their responses/progress SA — A — U — D — SD — NA

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Grand Total (I + II + III + IV)

V Strengths and Weaknesses of the Courseware

a. Identify the major strengths of the courseware

1. ____

2 ____

3 ____

b. Identify the major weaknesses of the courseware

1. ____

2 ____

3. ____

CAMPUS NEWS

AIU Meets at Jammu Varsity

The three-day 72nd annual meeting of the Association of Indian Universities and the Vice-Chancellors' conference was recently held at the University of Jammu. Inaugurating the conference the Union Minister of State for Power, Science and Technology, Mr. Y.K. Alagh, said there was need for application of science and technology to improve the quality of human life and inculcating scientific temper to create awareness about ecology, environment and the health related issues. He suggested that steps should be taken to carry out reorientation of science and technical education to make it professionally useful and competitive.

Prof Alagh said it was increasingly clear that in the field of basic research in Science and Engineering and associated higher educational system our goals will have to be established by strengthening the range and depth of our scientific and technological capabilities which in turn can only be achieved and sustained on the solid foundation provided by high quality basic research and a truly responsive and interactive educational system. We have to strengthen our technology development base with particular emphasis on ensuring partnership with industrial and techno-economic sectors Indian industry derives much of its strength from the higher educational system and has a major role to play and to look upon technology as a equity, one that cannot be divested, and as a fountain head of industrial development.

Gen K.V. Krishna Rao, Governor and Chancellor of the university, said the education we impart "should be relevant to the job market" as the basic problem of earning a livelihood would continue He said the role of the universities and other educational institutions was to "carve out an honourable place for ourselves among the great nations" This, he said, was possible only if the education system kept pace with the world which was moving fast towards globalisation. He called for measures for ensuring that the quality of education kept pace with modern developments He suggested that distance education should be further promoted and cooperation sought from non-governmental organisations which alone would make up for the deficient resources which prevent an increasing number of students from getting admission in colleges and universities

Chief Minister, Dr. Farooq Abdullah, in his address, expressed concern on the fall in the teaching standards in educational institutions He said teachers had lost respect in society and for this politicians and the teaching community were responsible. He favoured full autonomy to the universities and said he would favour Vice-Chancellors to be the supreme authorities in the universities He wanted universities to be devoid of government control. "We must decontrol the campuses to allow the Vice-Chancellors to get the upper hand so that there is no political interference in appointments and admissions," he pointed out

Prof. N.C. Nigam, Vice-Chancellor, Roorkee University, in his presidential address, said despite phenomenal increase in the number of universities and colleges in India during the past 50 years the access to higher education in the country was only for 6 per cent of the population in the age group of 18-23. He felt there was still a need for creating more opportunities for higher education.

He referred to the utiliterian focus in the academic programmes and said "Universities now celebrate their achievements as producers of useful knowledge" to justify their claim on public purse. He called for a serious rethinking to redefine the role and functions of universities lest the pursuit of material progress should hurt our precious heritage in art, literature and culture. He also referred to the tension between numbers and quality and the universities' struggle in reconciling with demands of mass higher ancient tradition education.

Sharing his concern at the growing reluctance of the State to support higher education, he decried higher education being described as of 'non-merit subsidy'. He felt it had dangerous implications and endorsed the UGC Chairperson's appeal for a wide ranging debate to create an informed opinion

Prof Nigam conceded the need for reservations for the historically disadvantaged as "in the long run this policy will strengthen our nation and bring about shared prosperity to all sections of our people". He, however, called for a review of the UGC guidelines so that they were more in tune with the ground realities, helped universities maintain standards as also saved the students the trauma of not coping with the course. However, for teachers, who determined the future of a generation of students, reservations were not advisable on academic grounds, he said.

Dr. A.S. Desai, chairperson of the University Grants Commission, dwelt on the impact of the UGC schemes on the development of higher education in the country.

Prof R R. Sharma, Vice-Chancellor of Jammu University, welcomed the delegates and said if women and students belonging to the poor classes were deprived of higher education it would lead to frustration He called for financial support in order to develop the infrastructure in the universities.

Prof K B. Powar, Secretary-General of the Association of Indian Universities, proposed the vote of thanks

The meeting opened with a call for structural reforms in the education sector so that higher education could become instrumental in removing poverty and social injustice.

The meeting also called for evolving a structure in order to ensure that higher education did not remain a luxury for the rich only. People belonging to the poor and backward classes should be allowed the opportunity to taste the benefits of higher education, it was discussed

The Vice-Chancellor of Jamia Hamdard University, Prof A Ahmed, in his paper, "Financing of Universities" observed that many universities had stopped appointing teachers in several faculties because of resource crunch. He said hitherto the universities were not being run like business enterprises but of late the central government had asked the universities to become capable of self-financing.

The basic concept of universities was to function as organs of a welfare state and as a benevolent and generous investment in human resource. He felt amazed over the way higher education had been listed as non-merit service. He said if the government implemented the proposal of reducing the subsidies for higher education from 90 per cent to 25 per cent within the next five years it would create chaos in the universities.

Dr. Ahmed said India rightly boasted on having increased the foodgrain production by four times during the past 50 years but this was possible only because the universities produced scientists, agricultural experts and engineers He said the country was at the bottom as far as expenses on higher education were concerned He said India spent 0 56 per cent of the GNP on higher education against 2 53 per cent in New Zealand, 1.98 per cent in Canada and 1 16 per cent in the USA. The total education expenditure outlay in the five-year plans revealed that from the first plan to the fourth one, the expenditure percentage increased from nine to 25. After that there was a gradual decrease with the result that by the 8th five-year plan the percentage was seven.

He said the UGC had no funds of its own and the increase in the plan and non-plan allocations to the UGC in the five-year plans was not sufficient to meet the financial requirements of all universities and colleges. He suggested that the central and the state governments should provide adequate financial support for higher education in the light of the changing scenario and growing importance of human resources development linked with economic growth.

Dr. Ram Takwale, Vice Chancellor, IGNOU, felt that communication technologies were transforming the existing industrial society into the information society. The process of globalisation and liberalisation had already set in and the existing educational institutions were likely to undergo radical transformation appropriate for the 21st century society. He said the modern communication technologies provided excellent opportunities for extending the outreach of education by ensuring its high quality Though initial costs were high, with large numbers accessed, the unit cost would be low.

Dr. Takwale explained in detail the efforts being made to establish Indian Training and Education Network for Development (INTEND) and Open Education Network (OPENET) by using satellite communication, their nature and types of applications.

Dr. S Venkateswaran, Director, BITS, Pilani, in his paper on 'Private Initiative in Professional Education' reminded that more than 75% of the existing colleges were set up only through private initiatives. With the new phenomena of self financing institutions, a larger number of private institutions have been established in the professional areas. While in the past, the motivating factor for starting private institutions was Philanthoropy, new institutions have been started with an attitude of entrepreneurship. He felt that if there were no private initiative, the situation would have been highly unsatisfactory in terms of meeting the needs of students' admission to engineering and technology areas.

He said privatisation was often thought of as a process to improve efficiency of the system. He suggested that some of the successful institutions like IITs, BITS, Pilani and certain Regional Engineering Colleges should formally associate with and adopt selected engineering colleges and develop them in structured and systematic fashion.

The conference also felt concerned over the growing interference in the universities by government agencies. Speakers resented the way government nominees were being inducted in the university bodies. Others said the National Council for Teachers Education and other regulatory bodies had encroached upon, thereby making a mockery of the autonomous character of the universities.

There were suggestions that the UGC, the Association of Indian Universities and the Central Advisory Board of Education should look into the provisions of the Acts of different state universities and suggest amendments.

The Vice-Chancellor of Himachal Pradesh University, Prof. C.L. Kundu, opined that statutory bodies should not interfere in the working of the universities.

Dr A.S. Desai, chairperson of the UGC, said the AICTE had refused to enter into a memorandum of understanding with the UGC for proper reforms in the working of technical and professional institutions. She informed the conference that the UGC had started a new scheme for educating the rural youth. Rural-based courses were being introduced in 55 colleges She advocated the need for cooperation between agricultural universities and the traditional universities for promoting research in agriculture and its allied sectors. She predicted that higher education could suffer in the future if the Education Ministry did not receive adequate funds for supporting the premier educational institutions and universities.

The conference concluded on a note of deep concern over the growing financial constraints being faced by premier institutions owing to political and bureaucratic interference in the universities, thereby diluting their autonomous character

The formation of a committee which could take up the matter of financial squeeze with the government was suggested Another suggestion was that the AIU should launch a campaign for securing bigger plan allocations for higher education The possibilities of the private sector in funding the universities should also be explored, it was suggested

Electronic Reading Centre for the Blind

The Indian Association for the Visually Handicapped, Mumbai, a charitable institution engaged in welfare activities for visually handicapped persons, aims to make available modern technology products and low vision aids to partially/fully visually handicapped persons. To further its aim, the Association has set up a Reading Centre, the first of its kind in India, at Vidyapeeth Vidyarthi Bhavan, Mumbai. Blind students pursuing College/University education can have a free access to this Centre to read textbooks, to touch, feel and learn charts, graphs, maps, diagrams or special contours, to have a recording of the spoken text or to take a braille printout of the scanned material.

A Text Reading Machine has been installed at the Centre which scans printed or typewritten matter in English and converts the same into electronically synthesised speech of human quality. It can also be connected to the computer. The text can then be edited with the help of windows compatible screen reading programme, spoken out through the sound blaster, stored on an audio tape or on a floppy for future use and/or braille printed.

This machine creates tactile images of diagrams, charts and other special contours, thereby enabling the visually impaired student to learn about the concept of objects, images, drawings, diagrams, charts and maps which is often required for subjects like mathematics, physics and geography

This provides spoken information about any diagram placed on it. Blind and vision impaired students can have voice feedback to images and thus independently learn many subjects like geography, geometry, biology, physics, physiology, electronics, astronomy and other subjects involving charts, graphs, maps, diagrams or spatial contours. The electronic images can also be stored for future use.

The Braille Printer installed at the Centre is controlled by an ink and braille labelled front panel Combined with speech feedback, this printer is easy to operate The printer is housed in an acoustic cabinet, which reduces the noise level to 60 db or less while printing.

A computer of suitable configuration with a 64 bit Sound Blaster Card with CD ROM drive has also been installed at the Centre to support flow of processed data and text for braille printing, audio recording, image processing and storage.

Duxbury Braille Software assists conversion of edited type written text into braille format for printing, besides converting the normal keybord into Perkins Brailler Type Braille Keyboard to write text in braille into the computer. The software helps in obtaining braille printout of scanned or typewritten materials in English and braille printout of materials in any language.

The Picture Braille Software converts scanned images into braille format. Images can be scanned with the help of a hand held scanner, processed in the computer and braille printed. The software also facilitates integration of diagrams in the text so that braille printout of any material can be taken with diagrams in appropriate places

The Screen Reading Software provides voice feedback, through the sound blaster, of any text on screen This helps in typewriting, editing and browsing through the text Visually impaired persons can work with any windows compatible software and can achieve independence on jobs involving word processing and spread sheet applications. This also facilitates in browsing websites on the Internet and the information thus browsed can be listened to, audio recorded, braille printed or stored

Further details may be obtained from the Indian Association for the Visually Handicapped, 132, Pradhan Building, S.V.P. Road Dongri, Mumbai-400 009.

Export of English Programme

The Central Institute of English and Foreign Languages, Hyderabad is reported to have entered into a memorandum of understanding with three universities of Kyrgystan of the Commonwealth of Independent States for imparting courses in English language. This was revealed by Prof. Pramod Talgeri, Vice-Chancellor, CIEFL in Hyderabad recently. He said that as part of the "export of English language" programme being taken up by the institute, the first batch of 12 students would be trained for one month on application of English in fields such as tourism, civil aviation and trade.

The institute is taking up special courses for 20 orphans from Kyrgystan, in the age group of 12-15 years. These orphans will be put up with families in the city. Prof Talgeri said the institute would set up a "School of Culture" in July 1998. The basic objective of the school was to impart knowledge on the cultural, social, economic and historical aspects of countries such as France, Germany, Spain and Russia.

He said that the institute had introduced several programmes at the national, state and city levels. Prof Talgeri said that for the first time a national evaluation programme aimed at determining the standard of English in different States of the country was proposed to be taken up. The institute with the cooperation of the Indira Gandhi National Open University was also introducing "English through distance education." At the State-level, the institute would impart training to 400 teachers of over 100 AP Residential Schools. The institute would also set up four centres for training in English in Hyderabad

Refresher Courses in Law

The National Law School of India University, Bangalore proposes to organise a Refresher Course in Business, Environment and Intellectual Property Rights Law, on January 18-February 7, 1998. The course is sponsored by the University Grants Commission.

The objective of the programme is to expose law teachers to emerging trends and contemporary developments in the context of financial markets reform and globalization of Indian economy.

The course will focus on subjects like (a) Infrastructure Contracts (b) Corporate law and management (c) Investor protection law (d) Foreign exchange management (e) Social responsibility of corporations (f) Banking law (g) Law relating .to non-banking finance companies (h) Insurance in market economies and desired legal regime (i) Environmental law, policy and practice (j) Environmental pollution and enforcement mechanisms (k) Environmental jurisprudence and judicial activism (l) National and international debates regarding intellectual property rights (m) Intellectual property rights law and emerging trends (n) Enforcement of intellectual property rights — current thinking and practice.

Further details may be obtained from Dr. S.V. Joga Rao, Additional Professor and Programme Co-ordinator, National Law School of India University, Post Bag No 7201, Nagarbhavi, Bangalore-560 072.

The National Law School proposes to organise another Refresher Course on Form of Government and Constitutional Governance, on January 18 to February 7, 1998. The course is sponsored by University Grants Commission.

The course is basically intended to expose the contemporary developments in Constitutional Law to the demands of a new form of government or amendment(s) to be made to the Constitution as well as the demand for rewriting a new Constitution in the place of the existing one. The focus would not be on the

Fundamental Rights Chapter of the Constitution, but on the three different branches of Government and other Constitutional functionaries. This course is available to full-time teachers with a minimum of five years of service in Universities and Colleges.

Further details may be had from Dr. V. Vijaya Kumar, Professor of Law and Programme Coordinator, National Law School of India University, Post Bag No 7201, Nagarbhavi, Bangalore-560 072.

Seminar on Medicinal Plants

A seminar on commercialisation and cultivation of medicinal plants was organised at the National Botanical Research Institute in Lucknow recently Inaugurating the seminar, Dr S.K. Jain , Director, Institute of Ethno Biology, said that instead of just talking of commercialisation, sincere efforts should be made to identify, grow and conserve the plants having medicinal value. He, however, regretted that though the field of science was undergoing changes every moment, the Ayurvedic and Unani medical colleges in the country had been following the same old curriculum He emphasised the need to change the syllabus according to the modern conditions.

Dr R.R. Rao, Deputy Director and Head of the Biodiversity Taxonomy Division, spoke on conservation of some important medicinal plants in the Himalayas.

Other speakers highlighted the agricultural techniques of important medicinal plants and the problems and constraints in marketing. A group discussion was also held on exploring commercial opportunities in cultivation, product development, quality control and marketing.

Some medicinal plants were also exhibited in the seminar which included among others 'tulsi', 'guggul', 'shatawar' and 'bramhi'.

Sharing Resources for Course in Human Rights

Dr. B R Ambedkar Open University (BRAOU), and University of Hyderabad (UOH) entered into a Memorandum of Understanding (MoU) under which the UOH will provide the study material relating to its Diploma Programme in Human Rights to the BRAOU to enable the latter to offer the programme of Human Rights in Telugu Medium. The Registrars of the both the Universities signed the Memorandum, and the Vice-Chancellor of BRAOU Prof. Afzal Mohammad, handed over a cheque for Rs. 3 lakhs as token honorarium for the material to Prof Govardhan Mehta, Vice-Chancellor of the University of Hyderabad.

Speaking on the occasion, Prof. Afzal Mohammad said that the signing of the memorandum was in tune with the objective of sharing of infrastructure and facilities with other universities as emphasised in University's IX Plan Prof Govardhan Mehta said that the MoU was only a beginning and hoped that several modes of cooperation would follow for jointly developing programmes useful to the students of both the Universities

Mandatory Apprenticeship for Law Students

Law students all over the country will be required to undertake a one-year "compulsory apprenticeship" with a practising lawyer to be awarded the "degree" of Bachelors of Law from the next academic year.

At present, a compulsory one-year apprenticeship was needed only for registering with any bar council and subsequent license for practising law with no ramifications on granting of degree by the university The students had to fulfil the 66 per cent attendance criteria as specified by the Bar Council of India.

The latest direction in a letter dated 21 October 1997 from the Bar Council of India sent to universities having legal studies, is to include apprenticeship as part of course curriculum after all the existing courses were revised in accordance with the council's stipulations

The stipulations were framed by the All India Consultative Committee meeting in October 1996 which also recommended a five-year LL B course in all the universities by slowly doing away with the three-year course and reducation in number of students enrolled in LL B courses.

A student would be awarded the degree only if he produces a certificate from a lawyer practising for not less than 15 years, stating that he has done his apprenticeship for minimum 180 days and has fared well.

The letter has also formulated a pattern of compulsory, optional and practical training papers which according to the BCI direction should be incorporated in revised courses to maintain uniformity of the courses all over India.

BCI, it seems, is determined to see that its direction is implemented in letter and spirit by the universities in the academic year 1998-99. To ensure this, the council would "derecogonise" degrees in law of those universities who fail to implement the direction within the given time.

"The holders of Law Degrees from such universities will not be entitled to be enrolled as advocates with any Bar Council in India," the letter said. The BCI letter further stated that the universities should revise the course and submit the compliance report with the council before the next academic session.

Punjabi Varsity Centre in Toronto

Punjabi University is reported to have entered into an understanding with the Peel Board of Education at Toronto (Canada) to open a centre for education and training (CET) to start, through correspondence, courses of M A. Education, M.Ed , B.Ed., LL B. (Academic) and diploma and certificate crash courses in the teaching of Punjabi as a foreign language.

The Department of Correspondence Courses of Punjabi University will assist it in managing the courses which are available through correspondence at Patiala whereas for other courses Punjabi University will provide academic assistance.

According to Dr B S Bhatia, Dean, Academic Affairs, Punjabi University, as per the proposed MoU decided at a meeting presided over by the Vice-Chancellor, Dr. Joginder Singh Puar, the CET would seek affiliation to the university and pay the fees in Canadian dollars. The students, except for LL B., enrolled with the CET would apply for admission to the Department of Correspondence Courses of Punjabi University The university would provide the CET with a single set of study material for every course whereas multiple copies of the same would be duplicated by the CET at its own cost according to the number of students enrolled.

As per the guidelines and conditions, the CET would appoint teaching staff for various courses as per the qualifications laid down for these posts It is also stipulated that every year at least one faculty member for each course from the university would visit Canada for two to eight weeks to monitor the programme, engage classes and look after other academic and administrative aspects.

The syllabi of various courses would largely be the existing syllabi of the university with the scope for some minor changes in optional papers

In case the students studying these courses in Canada visit Punjabi University, the university would conduct classes and provide them boarding and lodging.

Workshop on Environmental Law Education

The Centre for Environmental Education, Research and Advocacy (CEERA) in National Law School of India University (NLSIU) proposes to organize a worksho on "Importance of Environmental Law Education for better Environmental Management" on 13-15 January, 1998. The workshop is intended to give a kick-start to the Environment Management Capacity Building project (Law component) undertaken by CEERA. This project of Government of India, spread over a period of five years and supported by the World Bank, is aimed at building the capacity of four categories of Environmental managers in India, viz., (i) the Ministry of Environment, Pollution Control Boards and Local self Government, (ii) Industrial managers, (iii) NGOs including Law practitioners and (iv) Environmental Law teachers.

The objectives of the workshop are to (a) assess the needs of different target groups, so as to facilitate CEERA to design appropriate programmes for building their capacities; (b) identify and assess the potentialities and interests of a variety of institutions/ experts, invited for the workshop, so as to involve them in the different stages of execution of the project, and (c) to deliberate on the theme "Importance of Environmental Law Education for better environmental management," to facilitate preparation of curriculum and training modules to serve the needs of each of the target groups

Over 100 delegates from India and abroad are expected to participate in the workshop.

News from UGC

Countrywide Classroom Programme

Between 15th and 21st January, 1998 the following schedule of telecast on higher education through INSAT-1D under the auspices of the University Grants Commission will be observed. The programmes are telecast on the Doordarshan's National Network from 7.15 to 8.00 a m. every day except on Saturdays & Sundays. These programmes are also telecast on Doordarshan's National Network from 6.00 to 7.00 a.m. four days a week i.e. on Tuesdays, Thursdays, Saturdays and Sundays. On DD2 University Video Lecture Courses will be shown at midnight between 0000-0030 hrs.

and in the morning between 10-10.30 a.m. on Monday through Friday

Hindi Programmes are being telecast on Mondays, Wednesdays & Fridays from 6 00 to 6.30 a.m.

15.1.98

"Oxygen-1 : Oxygen & Life"
"Metro · Calculating the Impredictable"
"How Indian is English-1"
"Question Time-49"
"We the People-9 Legislatures at Work"
"Geometric Transformation · Translation"
"The Indian Public Service Commission . Their Role and Function"
"Perspectives on Sustainable Development"

UVLC

"Politics and Political System in India"
"Role of Trade Unions"

16.1.98

"The Human Comedy-2"
"We the People-10 : the Indian Executive"
"Understanding Cinema-13 : How Films are Made-2"
"Chinese Straw Weaving"
"Folk Rhythms-2"

UVLC

"Forgetting and Retrieval"
"Verification and Valuation"

17.1.98

"Recent Trends in Psychological Disorders . Child Depression"
"Bertrand Russell : A Champion of Rationality"
"Understanding Hotel Industry"

UVLC

No Telecast

18.1.98

"Science Behind Miracles-1"
"Communication Among Honey Bees"
"Museums around the World . British Museum — London"

UVLC

No Telecast

19.1.98

"The Chemistry of Colour-2"
"We the People-11 The Indian Judiciary"
"Metal Casting"
"Non-Verbal Communication-1"
"Modern Poetry-2 Poetry of the First World War"

UVLC

"The Imperial Cholas"
"Regulation of Internal Body Fluid-2"

20.1.98

"Paleo Climate-1 A Global Perspective"
"The Hindu Temple Sikhara-1"
"Gene Bank for Medicinal & Aromatic Plants"
"What on Earth are We Doing?"
"We the People-12 The Judiciary and the Human Rights in India"
"Approximation to Binomial distribution-2"
"Women in Profession Women Entrepreneurs-3"
"Operation Kaiko"

UVLC

"Social Change"
"Elementary Integration and Applications-6"

21.1.98

"Trout Culture in Kashmir"
"We the People-13 . The Constitution and the Indian Future"
"Application of Electrical Conductivity Measurement in Solution"
"Judiciary — The Pillar of Democracy"
"Gothic Lore-2 . Fiction"

UVLC

"Problems and Care of the Aged"
"Introduction to Oceanography"

Hindi Telecast

प्रात: 6.00 से 6.30 बजे तक

16.1.98

"निवास निर्माण में बचत के तरीके"
"मानव जीवन में सहयोग-3"

19.1.98

"मौम्क आर्किटेक्चर"
"गुप्त कालीन कला"

21.1.98

"तुलसी"
"मस्तिष्क मृत्यु"

News from Abroad

The Millennium Mission

The 72nd Annual Conference of the Distance Education & Training Council will be held on 18-21 April 1998 at the Del Mar, California (USA) The theme of the conference is "The Millennium Mission "

The topics proposed to be discussed include (i) The Council on Higher Education Accreditation — The New Voice for Accreditation; (ii) Effective Internet Marketing; (iii) ACE/College Credit Recommendation Service, (iv) From Concept to Market The Design and Rapid Development of Cost-Effective Courses, and (v) How Virtual Reality can enhance your Distance Training.

Further details may be had from Mr Michael P. Lambert, Executive Director, Distance Education & Training Council, 1601 18th Street, NW, Washington, D C 20009-2529

BOOK REVIEW

Some Advantages for Disadvantaged

Maharaj Singh*

Gopal Krishna Nanda and Adhikari Srikanta Dash (1996). Disadvantage schooling competence and invulnerability. Panchajanya, C/o URPL House, Bhubaneshwar-751 012. Pp viii+260. Rs. 275.

The book entitled *Disadvantage, schooling competence and invulnerability* has four major divisions. The first part includes the introduction and citation from the relevant literature. In this section, efforts have been made to provide the rationale for the study mentioned in the book The detailed research plan including research methodology has been given in the second part of the book The third major section of the book is devoted to the results and discussion of the two studies conducted by the authors The authors have concluded the final section of the book with general discussion, conclusions and with the implications of the studies conducted by them The book has been written in thesis style and will serve as reference book for the students of higher learning in the area.

The authors, first of all, have tried to uniquely define the concept of 'disadvantaged' in terms of psychological critical life situations (PCLS) and psychological critical life conditions (PCLC), and in terms of *Bhagawat Gita's* classification of knowledge as *Sattwik, Rajasik,* and *Tamasik.* On the basis of this concept, the authors claim that the disadvantaged person with lesser support from his inner environment draws more support from the outer environment for handling difficult situations and thus becomes invulnerable. The authors have also described the concept of competence in terms of its various attributes.

In the first study, the authors have tried to explore the effect of certain common variables upon various dimensions of the competence of the school children The variables such as the medium of instruction, types of school and grade, gender, and popularity of the children, have been claimed to be selectively affecting specific components of competence. The study has provided very rich and perhaps complicated pattern of relationship among the variables as well among various attributes of competence. Although the authors have tried to list the results and their interpretation, a large number of dependent variables/attributes has made the interpretation and understanding somewhat difficult to comprehend.

In the second study, the four groups of children, advantaged and disadvantaged in combination with competence and incompetence, were selected for intellectual, social, motivational and physical competence rated by their parents and teachers These four groups were further assessed for twenty-four behavioural dimensions of competence The complex pattern of results have been discussed and the authors conclude that parents' as well as teachers' ratings serve as an effective measure for children's competence. The authors have also concluded that invulnerable children are described as coping effectively with the adversities in the environment. It has also been suggested that even in early childhood striving to become invulnerable is detectable from the reports by the parents and teachers of the children. Moreover the invulnerable children seemed to adopt appropriate defence mechanisms that enabled them to protect their self-esteem.

Finally, the authors have provided the detailed conclusions and implications based upon their own studies and upon the research cited in the literature Some of the implications are discussed in terms of the problems in education, in general, and the problems of disadvantaged in particular. The authors have also offered some valuable suggestions for rearing and educating the young children.

To sum up, the authors have made an excellent effort to bring out the reference book in the area of competence and schooling of the children Detailed accounts of the results of the two studies are given in terms of tables and the text. It would have been better to provide some graphical representation of the relationship between various dependent measures and independent variables. Some of the references given in the text are not listed in the reference list at end of the book. Overall, it has been a welcome effort to bring out reference book in psychology that is based upon the empirical data and which has elements of explanation in terms of Indian philosophy and our way of life.

**Reader, Department of Psychology, Chaudhary Charan Singh University, Meerut-250 004*

THESES OF THE MONTH

A list of doctoral theses accepted by Indian Universities

AGRICULTURAL & VETERINARY SCIENCES

Agricultural Chemistry

1 Mane, Sunil Sheshrao **Studies on reclamation of alkali soil by using vermicompost.** (Dr R S Raut), Department of Agricultural Chemistry, Marathwada Agricultural University, Parbhani

Agronomy

1 Deshmukh, Suresh Ramkrishnarao **Effect of land treatments and intercrops on growth and yield in sorghum based intercropping system.** (Dr R V Nalamwar), Department of Agronomy, Dr Panjabrao Deshmukh Krishi Vidyapeeth, Akola

Aquaculture

1 Ahilan, B **Technology development for mass culture of gold fish Carrasius Auratus (Linnasus) through induced maturation and spawning.** (Dr M J Prince Jeyaseelan), Department ot Aquaculture,Tamil Nadu Veterinary and Animal Sciences University, Chennai

Veterinary Science

1 Santhakumar, R. **A comparative study of fish production in fish-livestock integrated and non-integrated systems.** (Dr N Ramanathan), Department of Fisheries, Tamil Nadu Veterinary and Animal Sciences University, Chennai

2 Venkateswaran, K V **Relationship between lithium and some interactants on feeding behaviour and central serotonin levels** (Dr B Gowrisankar), Department of Veterinary Science, Tamil Nadu Veterinary and Animal Sciences University, Chennai

3 Ramasamy, R **Ultrasonographic studies in liver disease of calves.** (Dr P Dhanapalan), Department of Veterinary Science,Tamil Nadu Veterinary and Animal Sciences University, Chennai

BIOLOGICAL SCIENCES

Bio-Chemistry

1 James, M T **Bio-chemical studies in cancer patients** (Dr V K Sasidharan), Department of Life Science, University of Calicut, Calicut

2 Judah, Sangeeta Dolly **Studies on the plants related to socio religious ceremonies in the rural and tribal areas of Jabalpur and Mandla district.** (Dr M Ommachan), Department of Bio-Science, Rani Durgavati Vishwavidyalaya, Jabalpur

3 Nalini, N **Incluence of cocos nucifera and cumminum cyminum in experimental colon cancer in rate.** (Dr Venugopal P Menon), Department of Biochemistry, Annamalai University, Annamalainagar

Bio-Technology

1 Adilaxmamma, K **Production and characterization of monoclonal antibodies against progesterone for use as diagnostic reagent in farm animals.** (Dr V Thiagarajan), Department of Animal Bio-technology, Tamil nadu Veterinary and Animal Sciences University, Chennai

Botany

1 Bhabhutmal, Shah Pratap **Ethnobotanical survey of Gir forest.** (Dr B R Pandit), Department of Botany, Bhavnagar University, Bhavnagar.

2 Joshi, Ram Prakash. **Genetic assessment of seedling vigour in barley genotypes under normal and stress conditions.** (Dr Praveen Singh), Department of Botany, Awadhesh Pratap Singh University, Rewa

3 Kunchithapatham, J **Cytomorphological and cytotaxonomical studies of South Indian species of solanaeae.** (Dr D Subramanian), Department of Botany, Annamalai University, Annamalainagar

4 R Sivakumar **Cytomorphological studies of the capsicum species.** (Dr B Vembu), Department of Botany, Annamalai University, Annamalainagar

5 Ravikumar, R **Biological assessment of water pollution: A study of the river Cauvery** (Dr R K Somashekar), Department of Botany, Bangalore University, Bangalore

6. Sakla, Satish Kumar **Genetical and epidemiological studies of lathyrism in Rewa division of Madhya Pradesh** (Dr RPS Dhakarey), Department of Botany, Awadhesh Pratap Singh University, Rewa

7 Samsudeen K **Studies on somaclonel variation produced by in vitro culture in zingiber officiale rosc.** (Dr M K Nair), Department of Botany, University of Calicut, Calicut

8 Sarraf, Sant Kumar **Mutagenic effects of aqeuous leaf extract of catharanthus roseus on the cytomorphological Attributes in turnip (Brassica-Rapa L)** (Dr Chandreshwar Prasad), Department of Botany, Vinoba Bhave University, Hazaribag

9 Singh, Shyamanand **Effect of grazing on phytosociology, primary productivity and nutritive value of important grasses of Banka District, Bihar.** (Dr D D Pandey), Department of Botany, Magadh University, Bodh-Gaya

10 Sinha, Shakuntla **Ecological studies of low lands of Biharsharif.** (Dr D D Pandey), Department of Botany, Magadh University, Bodh-Gaya

Marine Science

1 Fernandez, Cheryl Hyacinth **Chemoreception studies in relation to feeding responses in the Marine Shrimps Penaeus Indicus H. Milne Edwards and Metapenaeus Dobsoni Miers.** (Dr P S B R James), Department of Marine Science, Cochin University of Science and Technology, Kochi

Zoology

1. Chanda Kumari **Effect of heavy metal on the biochemistry and histochemistry of the Gonads of an aquatic bug.** (Dr S Ehteshmuddin), Department of Zoology, B B Ambedkar Bihar University, Muzaffarpur

2 Chandni Bala. **Effect of environmental factors on efficacy of some plant pesticides against sitophilus oryzae L.** Department of Zoology, Magadh University, Bodh Gaya.

3 Choudhary, Niranjan. **Effect of heavy metals on the metabolism of certain aquatic insects.** (Dr S Ehteshmuddin), Department of Zoology, B B Ambedkar Bihar University, Muzaffarpur.

4 Desai, Isha Vasantbhai. **Studies on avifauna and avian ecology of Shoolpaneshwar wildlife sanctuary, Gujarat.** (Prof Bommy Pilo), Department of Zoology, Maharaja Sayajirao University of Baroda, Vadodara

5 Kurup, Anju Krishna **Environmental and neuro-endocrine integration and regulation of tail regeneration in the gekkonidlizard, Hemidactylus flaviviridus** (Prof A V Ramchandran), Department of Zoology, Maharaja Sayajirao University of Baroda, Vadodara

6 Mathew, Shaliny **Studies on schratoxin contamination and ochratoxicosis in rabbits.** (Dr R J Verma), Department of Zoology, Bhavnagar University, Bhavnagar.

7 Ramesh Babu, M G. **Systematic studies in some genera of scelionidae (hymenoptera. Platygastroidea) of Kerala).** (Dr T C Narendran), Department of Zoology, University of Calicut, Calicut

8 Sheela, S **Studies on formicidae (hymenoptera) of Malabar (Kerala).** (Dr T C Narendran), Department of Zoology, University of Calicut, Calicut

EARTH SYSTEM SCIENCES

Geology

1 Bilfellon, George Bernard **Channel form and depositional model of the Brahmaputra river in upper Assam.** (Prof J N Sarma), Department of Applied Geology, Dibrugarh University, Dibrugarh

2 Majumdar, Pinaki Piyush **Sedimentation & tectonics of lower gondwana sediments around Bellampalli Pranhita-Godavari basin, Andhra Pradesh.** (Dr S Ganapathi), Department of Geology, Maharaja Sayajirao University of Baroda, Vadodara

3 Rao, Polasam Loka Sreenivasa **Diagnostic studies on certain aspects of asian summer monsoon circulation.** (Prof U C Mohanty and Dr R K Datta), Department of Atmospheric Sciences, Indian Institute of Technology, Delhi

4 Sanjay Kumar **Comparison of sediment yield in highly erodible watersheds one having mining area and the other having no mining area in Damodar Barakar catchement.** (Prof S P Banjee and Mr D N Shukla), Department of Environmental Science & Engineering, Indian School of Mines, Dhanbad

5 Surender Kumar **Production and evaluation of organo-fertilizer.** (Dr C R Sharma), Department of Soil Science, Himachal Pradesh Krishi Vishvavidyalaya, Palampur

ENGINEERING SCIENCES

1 Dutta, Anjan **Adaptive finite element analysis for accurate computation of stresses and design sensitivities for structures under transient dynamic loads.** (Prof C V Ramakrishnan and Dr Puneet Mahajan), Department of Applied Mechanics, Indian Institute of Technology, Delhi

2 Veera Venkata Ravi Kumar, G **Simulation of nonlinear dynamic finite strain contact problems with special application to high velocity impact.** (Prof C V Ramakrishnan), Department of Applied Mechanics, Indian Institute of Technology, Delhi

Chemical Engineering

1 Sharma, Atul. **Kinetic investigations on biomass pyrolysis and gasification.** (Dr T R Rao), Department of Chemical Engineering, Indian Institute of Technology, Delhi.

2 Murthy Z Panchakshari, V **Studies on reverse osmosis membrane transport models.** (Prof Sharad K Gupta), Department of Chemical Engineering, Indian Institute of Technology, Delhi

Fuel Engineering

1 Mohapatra, Saroj Kumar **Modelling of fluidised bed coal combustion process.** (Prof G V Reddy), Department of Fuel Engineering, Indian School of Mines, Dhanbad

Geo-Engineering

1 K S R Murty **Water resources management studies Varaha river basin, Andhra Pradesh: An integrated approach.** (Dr V Venkateswara Rao), Department of Geo-Engineering, Andhra University, Waltair

Mechanical Engineering

1 Papney, Lila Dhar **Thermal performance of a water body due to heated water discharge from the power plants.** (Dr Shravan Kumar Gupta), Department of Mechanical Engineering, Indian Institute of Technology, Delhi

Technology

1 Balakrishnan, K V **Studies in oleoresins (An investigation into food colour from Indian chilli oleoresin).** (Dr K E George), Department of Technology, Cochin University of Science and Technology, Kochi

2 Sundaresan, G **Studies on the performance of sewing threads during high speed sewing in an industrial lockstitch machine.** (Prof K R Salhotra and Prof P K Hari), Department of Textile Technology, Indian Institute of Technology, Delhi

MATHEMATICAL SCIENCES

Mathematics

1 N Chandramowliswaran **Automorphisms of certain relatively free groups and one relator groups.** (Prof J B Srivastava), Department of Mathematics, Indian Institute of Technology, Delhi

2 Najmi, Muqaddas **On some problems of Q-function theory.** (Dr Mumtaz Ahmad Khan), Department of Applied Mathematics, Aligarh Muslim University, Aligarh

3 Singh, Bhanu Pratap **Summability of fourier series, derived fourier series and its sequence** (Dr M P Sachan), Department of Mathematics, Awadhesh Pratap Singh University, Rewa

MEDICAL SCIENCES

Pharmacy

1 Doshi, Abha. **Prodrug concept and formulation of some anti-inflammatory agent.** (Dr S G Deshpande), Department of Pharmacy, Shreemati Nathibai Damodar Thackersey Women's University, Mumbai.

Preventive Medicine

1 Dinakaran, Manicavasaka, A. **Studies on the immune status of cattle to rinderpest in Tamil Nadu.** (Dr J Ramkrishna),

Department of Preventive Medicine, Tamil Nadu Veterinary and Animal Sciences University, Chennai.

PHYSICAL SCIENCES

Chemistry

1. Bal Raj. **Thermodynamics of electrolytic solutions.** (Dr K C Singh), Department of Chemistry, Maharshi Dayanand University, Rohtak.

2 Gangadhar, B P **Studies on opioid peptides and applications of some new techniques to solid phase peptide synthesis** (Dr K M Sivanandaiah), Department of Chemistry, Bangalore University, Bangalore.

3. Kadlag Ashok Dattatray **Studies on carbon monoxide sensitivity of cytocrome oxidase and gibberellin (GA8) sensitivity of sorghum cultivars as related to their yield and stress tolerance.** (Dr B B Desai), Department of Chemistry, Mahatma Phule Krishi Vidyapeeth, Rahuri.

4 Rao Bhaskara, R **Combustion studies on magnesium based fuel rich propellant.** (Dr P Nageswara Rao), Department of Chemistry, Kakatiya University, Warangal

5. Rehani, Rajeev Budhdev **Synthetic studies on heterocyclic chemistry.** (Prof A C Shah), Department of Chemistry, Maharaja Sayajirao University of Baroda, Vadodara

6 Selvapalam, N **Synthetic studies in hemiterpenoids.** (Prof R C Anand), Department of Chemistry, Indian Institute of Technology, Delhi

7 Siddappa, Chabanur Hanamant **A study of niobium and molybdenum complexes.** (Dr V B Mahale), Department of Chemistry, Karnatak University, Dharwad

8 Singh, Binay Kumar **Studies on water pollution of Bhurkunda Area.** (Dr K K Srivastava), Department of Chemistry, Vinoba Bhave University, Hazaribag.

9. Singh, Jaibir. **Thermodynamics of molecular interactions.** (Dr V K Sharma), Department of Chemistry, Maharshi Dayanand University, Rohtak.

Physics

1 Athar, Sajjad **Neutrino nucleus reactions at intermediate energies.** (Prof S K Singh), Department of Physics, Aligarh Muslim University, Aligarh.

2 Gupta, Santosh Kumar **Studies of mechanoluminescence of silicates (CaSiO3 . Tb, Ce).** (Dr M S K Khokhar and Dr B P Chandra), Department of Physics, Guru Ghasidas University, Bilaspur

3 Singh, Amrendra Kumar **A study on the theory of fuzzy subsets and their applications.** Department of Science, Veer Kunwar Singh University, Ara

4 Singh, Mahendra. **Thermodynamic studies on energy conservation and heat recovery options in refrigeration and airconditioning systems.** (Prof S C Kaushik), Department of Energy Studies, Indian Institute of Technology, Delhi.

5 Singh, Partap. **Characterization of some ion-bombarded morphous/crystalline semiconductors and investigation of their electronic and optical properties.** (Dr K L Bhatia and Dr Nawal Kishore), Department of Physics, Maharshi Dayanand University, Rohtak

6 Vishnoi, Gargi **Design development and characterization of optical fiber sensors based on intensity modulation.** (Prof. T C Goel and Prof P K C Pillai), Department of Physics, Indian Institute of Technology, Delhi

CII

Confederation of Indian Industry

Visit

ALTERNATIVES

EDUCATION & CAREERS

22 - 24 January 1998 : New Delhi

International Conference & Exposition on Education & Careers

VENUE :

Convention Centre (Gate No 3), India Habitat Centre, Lodi Road
(Entry through Vardhman Marg), New Delhi 110 003

TIMINGS :

10.00 a.m. - 6.00 p.m. (all three days)

EXHIBITOR PROFILE :

• British Council • United States Educational Foundation In India (USEFI) • Australian International Education Foundation (AIEF) • IDP Education Australia • Leeds University • Wigan & Leigh • Hawaii University • Aust-India Education • Pearl Academy of Fashion • Skyline Business School • Mainframe Technologies India Pvt Ltd • NIIT • NIS • All India Management Association (AIMA) • International Institute of Hotel Managment • Institute of Advanced Management • BLS Institute of Management • National Open School • Institute of Company Secretaries of India • Subbalakshmi Lakshmipathy College of Science • Educational Consultants India Ltd. • Map Consultants • ICWAI • Canadian School of India • ILA Education

PONDICHERRY UNIVERSITY
CENTRE FOR TOURISM STUDIES
M.T.A. Program 1998-2000

★ **S.P. SIVAKUMAR,** Hon'ble Minister for Tourism, Pondicherry *I am very happy to know that the CTS and its MTA program are doing very well For this I must appreciate the efforts of the Director and the students* ★ **Kenya Wildlife Service, Nairobi :** " *resourceful . lot of confidence* " ★ **Taj Residency, Hyderabad :** " work on a scale of 1 to 10 can be rated 7 5 " ★ **Subhash Goyal, IATO President :** *"dynamic students led by a dynamic Professor"*

Along the Coromandel Coast, lapped by the waters of the Bay of Bengal, spread over 800 acres of land and vegetation and breathtaking ravines, Pondicherry University is the ideal place to prepare oneself for a career in Tourism and related industries

★ **The Centre for Tourism Studies** was established by the **Ministry of Tourism and Civil Aviation.**

★ It offers a 2-year, 4-semester Master of Tourism Administration **Tourism Education with an MBA-orientation.**

★ It is a member of TAAI and IATO

★ It has an impressive PLACEMENT RECORD

★ It is enriched by **Guest Lectures, Tours, Projects and Industrial Interfaces.**

★ It permits one to get, simultaneously, a few other Degrees/Diplomas as well

★ Its students practice **Management** and **Creativity** organise National Meets, edit Newsletters, manage Library and Placements and handle Finances

WANT TO BE AN MTA? READ ON.

★ You have to be graduate of any discipline (or a FINAL YEAR DEGREE student)

★ You have to sit for an Objective-type written test which covers English, General Knowledge Current Affairs, Logical Reasoning etc

★ You could take the Test in any of these TWELVE Centres **Bangalore, Calcutta, Chennai, Calicut, Delhi, Gangtok, Hyderabad, Imphal, Mumbai, Pondicherry, Thiruvananthapuram, and Visakhapatnam.**

★ If you do well in this Test, you will be called for **Group Discussion & Personal Interview** to the Centre of your choice **Calcutta or Pondicherry**

KEEN ?

★ Get yourself a Prospectus cum Application form from **THE DIRECTOR, CENTRE FOR TOURISM STUDIES, PONDICHERRY UNIVERSITY, PONDICHERRY-605 014.**

★ Send a self-addressed envelope (10 x 6 cm) stamped for Rs 15/- with a crossed D D for Rs 150/- (which includes Selection Fees) in favour of **Finance Officer, Pondicherry University.**

Foreign Students should apply before 27 02 98 through M H R D , Government of India

As you would agree, the University cannot be held responsible for any postal or transit delay

REMEMBER

1 Last date for issue of prospectus and receipt of filled-in applications 22 01 1998
2 Time and Date of Written Test 2 30 P M on 22 02 1998

Phone 65244-48 Extn 368
Fax Nos 091-413-65265/65211/65255
E-Mail biopu@pondiuni ren nic in

DR. S.V. NARAYANAN, MBA, Ph.D.
DIRECTOR
CENTRE FOR TOURISM STUDIES

INDIAN STATISTICAL INSTITUTE

Telephones 577 8085 (4 lines)
577 7694 (4 lines), 577 8596 (2 lines),
577 3243 (2 lines), 577 3445,
577 5402 (2 lines), 577 5502 (2 lines)
Telegram STATISTICA, CALCUTTA-700 035
Fax +(91) (33) 577 6680
E-mail @isical emet in

203 BARRACKPORE TRUNK ROAD
CALCUTTA-700 035, INDIA

RAJA RAO MEMORIAL PRIZE : 1997-98

Announcement

The Indian Statistical Institute invites nominations for RAJA RAO MEMORIAL PRIZE · 1997-98 Conditions for the award and the manner in which nominations are to be made are set out below

1 The prize will be awarded to a person generally working in India and who is less than 35 years of age on 01 July 1997
2 The prize will be awarded for the best research work done in India in published articles as well as accepted thesis in Survey Methodology
3 The prize will be awarded at the Institute's Annual Convocation, as far as possible
4 The candidate recommended for the prize will have to come to Calcutta and present the results in a seminar at the Institute The prize-winning candidates's travel to Calcutta by train and his/her stay in the Institute's campus in Calcutta for this purpose will be supported by the Institute
5 Applications/nominations for the prize may be made by the candidates themselves or by others and be forwarded through the Head of the Institute to which the candidate is affiliated, they should be accompanied by copies of the concerned research papers and the candidate's biodata (with proof of age) and sent to the address given below to reach by **27 February 1998**
6 Candidates who have not applied or been nominated, may also be considered
7 If no candidate is found suitable for the prize, no prize will be awarded
8 The selection of the prize-winning candidate will be made by a committee of experts and is subject to ratification by the Academic Council of the Institute

Address for sending applications/nominations

Director
(Raja Rao Memorial Prize)
Indian Statistical Institute
203, Barrackpore Trunk Road,
Calcutta-700 035.

SCHOOL OF MANAGEMENT

PONDICHERRY UNIVERSITY

(A CENTRAL UNIVERSITY)

ADMISSION TO THE M.B.A. PROGRAM 1998-2000

Lapped by the waters of the Bay of Bengal and spread over 800 acres of flora and ravines, the University had established, the School of Excellence in 1988 THE SCHOOL OF MANAGEMENT The School, since has completed a DECADE of Dedication to Quality Management Education

COURSE HIGHLIGHTS

- **FULL-TIME, TWO-YEAR, FOUR-SEMESTER, MBA PROGRAM.**
- **EXCELLENT PLACEMENT** record in reputed organisations through **CAMPUS RECRUITMENT.**
- Valuable Interface with Industry through Annual Meets organised entirely by students.
- Enrichment of course content through **GUEST LECTURES, TERM PROJECTS, WORKSHOPS, INDUSTRIAL PROJECTS and EDUCATIONAL TOURS.**
- Provision to pursue, simultaneously, **MBA, CFA** (of ICFAI) as well as PG Diplomas of this University and IGNOU
- **SUBSIDISED FEE STRUCTURE,** as ours is a School of Excellence of a **CENTRAL UNIVERSITY.**
- Transfunctional and Transdisciplinary specialisational opportunities

ELIGIBILITY AND SELECTION

- **GRADUATES** of any discipline, as well as **FINAL YEAR DEGREE STUDENTS** of any recognised Higher Educational Institution, may apply
- **A WRITTEN ADMISSION TEST,** for all the Applicants at any of their chosen **TWELVE CENTRES** listed below
- **GROUP DISCUSSION & INTERVIEW,** for the candidates, shortlisted from the Test Score

TEST CENTRES

- **BANGALORE, CALCUTTA, CALICUT, CHENNAI, GANGTOK, HYDERABAD, IMPHAL, MUMBAI, PONDICHERRY, DELHI, THIRUVANANTHAPURAM and VISAKHAPATNAM.**

INTERVIEW CENTRES

- **CALCUTTA, DELHI, HYDERABAD and PONDICHERRY**
- **FOREIGN STUDENTS** should approach us before 27th Feb '98 through the Ministry of Human Resource Development, Government of India Only those **NRI CANDIDATES** who are sponsored by their parents should approach us Selection will be made based on **GROUP DISCUSSION & INTERVIEW** during **MARCH, 1998.**

KINDLY NOTE

- *The School of Management shall not be held responsible for any delay arising out of postal system or transit*

FOR APPLICATION FORMS & PROSPECTUS WRITE TO

THE DEAN, SCHOOL OF MANAGEMENT, PONDICHERRY UNIVERSITY, PONDICHERRY-605 014, sending a crossed DD for Rs 400/- (which includes Selection Fees) in favour of **THE FINANCE OFFICER, PONDICHERRY UNIVERSITY,** drawn on any Nationalised Bank, payable at Pondicherry No other mode of payment will be accepted. SC/ST/Physically Handicapped candidates are exempted from this fee, if relevant copies of the attested certificate are enclosed Please enclose a **SELF-ADDRESSED STAMPED** (for Rs 15/-) **ENVELOPE** (25 cm x 15 cm)

DATES TO REMEMBER

1.	Last date for issue and receipt of completed Application Forms	20 01 1998
2	Date and Time of Admission Test 10 30 A M	22 02.1998

PONDICHERRY UNIVERSITY
PONDICHERRY-605 014
Phone : 091-413-65244,
Fax : 091-413-65265/65211/65255
E-Mail : biopu@pondiuni.ren.nic.in

DR. S.V. NARAYANAN, MBA, Ph.D.
DEAN,
SCHOOL OF MANAGEMENT

GOUTHAM ACADEMY OF MEDICAL SCIENCES

No. 258, 5th Main, 2nd Cross, 1st Phase, Manjunathnagar, West of Chord Road, Rajajinagar,
Bangalore-560 010. PHONE : 080-3489519, 3303737, FAX : (91) 080-338 5300
E-mail : goutham@giasbg01.vsnl.net.in, web site : http//www bangaloreonline.com.goutham

Admission Notice

A. **BACHELOR'S DEGREE IN PHYSIOTHERAPY** **B.Sc., PT**
Recognised by : Government of Karnataka
Affiliated to : Rajiv Gandhi Health University,
Eligibility : PUC/PDC/H Sc/10+2 with science 45% in PCB, DURATION 4 years

B. **DIPLOMA IN NURSING** **G.N.M.**
Recognised by : Government of Karnataka &
Affiliated to : INC Recgd examination board
Eligibility : PUC/PDC/H Sc/10+2 DURATION . 3 yrs

C. **DIPLOMA IN PHYSIOTHERAPY** **D.P.T.**
Recognised by : Government of Karnataka &
Affiliated to : Para Medical Board
Eligibility : PUC/PDC/H Sc/10+2 with science 40% in PCB, DURATION · 3½ years

D. **DIPLOMA IN RADIOLOGY (X-RAY) TECHNICIAN** **DMRT**
Recognised by : Government of Karnataka
Affiliated to : Para Medical Board
Eligibility : 10Std/S S L C /PUC/PDC/10+2/HSC DURATION 2 years

E. **DIPLOMA IN MEDICAL LABORATORY TECHNICIAN** **DMLT**
Recognised by : Government of Karnataka
Affiliated to : Para Medical Board
Eligibility : 10 Std S S L.C/PUC/PDC/10+2/HSC DURATION 2 years

Correspondence Courses

F. **PG. DIPLOMA IN HOSPITAL ADMINISTRATION** **PG.DHA**
Recognised by : Indian Hospital Association Health Management Forum New Delhi,
Eligibility : Any Degree DURATION One Year

G. **PG. DIPLOMA IN NURSING ADMINISTRATION** **PG.DNA**
Regd. by : Indian Hospital Association New Delhi,
Eligibility : Degree/Diploma in Nursing **DUR.** 1 Yr.

Few seats are available. Separate Hostel. College Bus available. Clinical facility provided at Govt. Hospital. Come with originals directly for admission. For application cum prospectus send Rs. 150/- by D.D./Cash/M.O.

IDA ASSISTED INDIA ENVIRONMENTAL MANAGEMENT CAPACITY BUILDING PROJECT OF THE MINISTRY OF ENVIRONMENT & FORESTS

ENVIRONMENTAL ECONOMIST
IN THE PROJECT IMPLEMENTATION CELL

Applications are invited for the post of a **Consultant** to work in the Project Implementation Cell, Environmental Economics Programme of the IDA assisted India Environmental Management Capacity Building Project at the Ministry of Environment & Forests, New Delhi-110 003.

Qualifications : At least second class Master's Degree in Economics with environmental economics as a paper and five years of teaching/research experience preferably in environmental economics,

OR

M.Phil with dissertation in environmental economics and two years of teaching/research experience preferably in environmental economics,

OR

Ph.D. in environmental economics with atleast one refereed publication.

Salary : Consolidated salary around Rs 12,000/- p m. depending on qualification.

Duration : Initially for one year, but can be extended upto 31st March, 2002 depending on performance.

Applications with Curriculum Vitae, names of referees and copies of selected publications should be sent to the **Director, Madras School of Economics, Gandhi Mandapam Road, Chennai-600 025** within three weeks from the date of this advertisement

CLASSIFIED ADVERTISEMENTS

ALIGARH MUSLIM UNIVERSITY
ALIGARH (U.P.)

Advertisement No. 4-A/97-98
Dated : 22.12.1997

Applications on the prescribed form are invited for the following posts by 31.01.1998.

Number and nature of the posts may vary at the time of interview The Selection Committee will be authorised to relax the prescribed qualifications if a highly qualified scholar is otherwise found suitable for the post Higher initial start may be given to candidates possessing exceptional qualifications and experience

Scale of Pay

Professor	Rs 4500-7300 plus allowances
Reader	Rs 3700-5700 plus allowances
Lecturer	Rs 2200-4000 plus allowances

A. FACULTY OF ARTS/SOCIAL SCIENCES/LIFE SCIENCES/LAW/THEOLOGY

1 Professor of Shiia Theology, Department of Shiia Theology

2 Professor of Law (Constitutional Law), Department of Law

3 Professor of Philosophy, Department of Philosophy

QUALIFICATIONS — ESSENTIAL :

An eminent scholar with published work of high quality actively engaged in research with 10 years of experience in Postgraduate teaching and/or research at the University/ National Level Institutions, including experience of guiding research at doctoral level

OR

An outstanding scholar with established reputation who has made significant contribution to knowledge

Note for the post at S.No. 2 : Those who have applied in response to earlier Advt No 3-A/97-98 dated 01 10 1997 need not apply again They will be considered on the basis of their previous applications if found eligible

4 Reader in Home Science, Women's College

5 Reader in Botany (Ecology/Biostatistics), Department of Botany

QUALIFICATIONS — ESSENTIAL

Good academic record with a Doctoral Degree or equivalent published work Candidates from outside the University system in addition shall also possess atleast 55% marks or an equivalent grade at the Master's Degree level Eight years experience of teaching and/or Research including upto three years for research degrees and has made some mark in the areas of Scholarship as evidenced by quality of publications, contribution to educational renovation, design of new courses and curricula

Desirable : for the post at S.No. 5

Research work of high standard on environmental problems and experience of guiding research

6 Reader in Sunni Theology, Department of Sunni Theology

QUALIFICATIONS — ESSENTIAL

a) A consistently good academic record with Doctoral degree

b) Evidence of being actively engaged in Research.

c) At least five years teaching experience of Post Graduate classes in Sunni Theology

OR

a) Fazil of Madarsa (whose degree is recognised by the University) with scholarly published work

b) Evidence of being actively engaged in Research

c) At least eight years teaching experience of higher classes in a Madarsa whose degree is recognised by the University

d) Adequate knowledge of English

7 Lecturers in Sanskrit, Department of Sanskrit

8 Lecturers in Sanskrit, Women's College

9 Lecturers in West Asian Studies (Geography), Centre of West Asian Studies

10 Lecturers in Political Science, Department of Political Science

QUALIFICATIONS — ESSENTIAL :

Good academic record with atleast 55% marks or an equivalent grade at Master's degree level in the relevant subject from an Indian University or an equivalent degree from a foreign University

Candidates besides fulfilling the above qualifications should have cleared the eligibility test for lecturers conducted by the UGC, CSIR or similar test accredited by the UGC, provided that Candidates who have submitted Ph D Thesis or passed the M Phil Examination by 31st December, 1993 are exempted from the eligiblity test for lecturers conducted by the UGC, CSIR or similar test accredited by the UGC.

Note for the posts at S.No. 8 and 10 :

Those who have applied in response to earlier Advt No 2-A/95-96 and 3-A/95-96 dated 01 08 1995 and 01 12 1995 respectively need not apply again They will be considered on the basis of their previous applications if found eligible

11 Lecturers in Journalism, Department of Journalism and Mass Communication

QUALIFICATIONS — ESSENTIAL

Good academic record with atleast 55% marks or an equivalent grade at Master's degree level in Communication/Mass Communication/Journalism from an Indian University or an equivalent degree from a foreign University

Candidates besides fulfilling the above qualifications should have cleared the eligibility test for lecturers conducted by the UGC, CSIR or similar test accredited by the UGC

OR

At least 55% marks or an equivalent grade at Master's degree level in Social Sciences/ Science/Humanities with at least second class bachelor's degree or postgraduate diploma in communication/mass communication or Journalism from a recognized Indian University/National Institute

Candidates besides fulfilling the above qualifications should have cleared the eligibility test for lecturers conducted by UGC, CSIR or similar tests accredited by the UGC

Note : Those who have applied in response to earlier Advt No 3-A/97-98 dated 01 10 1997 need not apply again They will be considered on the basis of their previous

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GOVERNMENT OF INDIA
MINISTRY OF SCIENCE & TECHNOLOGY
Department of Science & Technology

JOINT R&D FUNDING IN THE AREA OF DRUGS AND PHARMACEUTICALS

The Department of Science & Technology (DST) under its scheme entitled "Drugs & Pharmaceuticals Research" promotes Research and Development in the area of Drugs and Pharmaceuticals The scheme covers R&D in all the systems of medicine — modern, ayurvedic, homoeopathic, Unani etc

The main objective of the programme is to give thrust to Research and Development in the drug sector so as to enable the industrial enterprises and research and academic institutions to take up exploratory drug design and drug development, development of key intermediates or novel drug delivery Systems, and development of innovative processes for known drugs

Joint proposals are invited from Industry and University/Public Funded Research Institutions aimed at development of a product/process in the area of Drugs and Pharmaceuticals

For obtaining project submission format or for other related details, interested groups may contact

DR. LAXMAN PRASAD,
ADVISER(TT),
DEPARTMENT OF SCIENCE & TECHNOLOGY,
MINISTRY OF SCIENCE & TECHNOLOGY,
TECHNOLOGY BHAWAN, NEW MEHRAULI ROAD,
NEW DELHI-110 016
Phone 651 0686 (off)
Fax 011-661682, 6862418, 6863847

—davp 8051(19)/97

applications if found eligible

B. FACULTY OF MEDICINE

12 Professors of General Medicine, Department of Medicine

QUALIFICATIONS — ESSENTIAL

M D (Medicine)/

M D (General Medicine)

Teaching/Research experience

As Reader in General Medicine for 04 years in a Medical College

13 Professor of Medicine, (Gastro Enterology) Department of Medicine

QUALIFICATIONS — ESSENTIAL

D M (Gastro Enterology)

M D in Medicine with 02 years special training in Gestro Enterology

Teaching/Research experience

As Reader in Gestro Enterology for 04 years in a Medical College

14 Professor of Pathology, Department of Pathology

QUALIFICATIONS — ESSENTIAL

M D (Pathology)/

M D (Pathology & Bacteriology)/

M D (Pathology with Bacteriology)/

Ph D (Pathology)/

D Sc (Pathology)

Teaching/Research experience

As Reader in Pathology for 04 years in a Medical College

15 Professor of Bio-chemistry, Department of Bio-chemistry

QUALIFICATIONS — ESSENTIAL

M D (Bio-chemistry)/

M B B S with M Sc (Medical Biochemistry)/

Ph D (Medical Biochemistry)/

D Sc (Medical Biochemistry)

Teaching/Research experience

As Reader in Biochemistry for 04 years in a Medical College

16 Professor of TB & Chest Diseases, Department of TB & Chest Diseases

QUALIFICATIONS — ESSENTIAL

M D (Tuberculosis)/

M D in Medicine with T D D , D T D or D T C D

Teaching/Research experience

As Reader in Tuberculosis for 04 years in a Medical College

Note for the posts at S.No. 12 and 16 :

Those who have applied in response to earlier Advt No 1-A/97-98 and 2-A/97-98 dated 01 05 1997 and 16 08 1997 respectively need not apply again They will be considered on the basis of their previous applications if found eligible

17 Reader in Dermatology, Department of Dermatology

QUALIFICATIONS — ESSENTIAL

M D (Dermatology & Venereology)/

M D (Medicine) with D V D , D D

Teaching/Research experience

As Lecturer in Venereology & Dermatology for 05 years in a Medical College

18 Readers in General Medicine, Department of Medicine

QUALIFICATIONS — ESSENTIAL :

M D (Medicine)/

M D (General Medicine)

Teaching/Research experience

As Lecturer in General Medicine for 05 years in a Medical College

19 Reader in Community Medicine, Department of Community Medicine

QUALIFICATIONS — ESSENTIAL

M D (Social & Preventive Medicine)/ (Community Medicine)

M D (Medicine) with D P H

Teaching/Research Experience

As Lecturer in Social & Preventive Medicine for 5 years in a Medical College

20 Lecturers in General Medicine, Department of Medicine

QUALIFICATIONS — ESSENTIAL

M D (Medicine)/

M D (General Medicine)

Teaching/Research experience

Requisite recognised postgraduate qualification in the subject

21 Lecturers in Anaesthesiology, Department of Anaesthesiology

QUALIFICATIONS — ESSENTIAL

M D (Anaesthesiology)/

M S (Anaesthesiology)

Teaching/Research experience

Requisite recognised postgraduate qualification in the subject

22 Lecturers in Bio-chemistry, (Temporary) Department of Bio-Chemistry

QUALIFICATIONS — ESSENTIAL

M D (Bio-chemistry)/

M B B.S with M Sc (Medical Bio-chemistry)/

Ph D (Medical Bio-chemistry)/

D Sc (Medical Bio-chemistry)

Teaching/Research experience

Requisite recognised postgraduate qualification in the subject

23 Lecturers in Community Medicine, Department of Community Medicine

QUALIFICATIONS — ESSENTIAL

M D (Social & Preventive Medicine)/ (Community Medicine)

M D (Medicine) with D P H

Teaching/Research Experience

Requisite recognised postgraduate qualification in the subject

24 Lecturers in Pathology, Department of Pathology

QUALIFICATIONS — ESSENTIAL

M D (Pathology)/

M D (Pathology & Bacteriology)/

M D (Pathology with Bacteriology)/

Ph D (Pathology)/

D Sc (Pathology)

Teaching/Research Experience

Requisite recognised postgraduate qualification in the subject

25 Lecturers in Oral Medicine/Oral Pathology, Department of Oral and Dental Pathology & Microbiology, Dental College

QUALIFICATIONS — ESSENTIAL

M D S (Oral Pathology) OR

M D S (Oral Medicine)

MOHANLAL SUKHADIA UNIVERSITY : UDAIPUR

ADVERTISEMENT NO. 4/97 **DATED : 12TH DECEMBER, 1997**

Applications are invited on prescribed application form for the following posts on regular basis Application form alongwith details of qualifications etc can be obtained from the Deputy Registrar (Recruitment), Mohanlal Sukhadia University, Udaipur-313 001 on payment of Rs 10/- by Cash/I P O payable to Mohanlal Sukhadia University, Udaipur alongwith a self addressed envelope of 27x12 cms with postal stamps of Rs 6/- affixed on it (in case the application form is desired by post) LAST DATE for receipt of applications is **31st January, 1998.**

1 DEPUTY REGISTRAR-1 (SC) Pay Scale Rs 3000-4500
2 ASSISTANT REGISTRAR-2 (SC) Pay Scale Rs 2200-4000
3 SUPDT PHYSICAL EDUCATION-3 (1 for SC) Pay Scale Rs 2200-4000.

THE CANDIDATES WHO HAVE ALREADY APPLIED IN RESPONSE TO OUR EARLIER ADVERTISEMENT ISSUED FROM TIME TO TIME FOR THE ABOVE POSTS **WILL NEED TO APPLY AFRESH WITH THEIR LATEST BIO-DATA.** THEIR PREVIOUS APPLICATIONS SHALL NOT BE CONSIDERED

GENERAL NOTE

1 Number of post(s) in any category may be increased or decreased without notice
2 The University reserves the right not to fill up post(s) advertised
3 Application received otherwise than on prescribed form shall not be entertained
4 Application received in the office after the last date shall not be entertained
5 Candidate(s) already in services should apply through proper channel
6 Candidates belonging to SC/ST/OBC should indicate their category alongwith the copy of the certificate issued by the competent authority
7 Candidate desirous to apply for more than one post should send separate application form for each post

REGISTRAR

26 Lecturer in Operative Conservative Dentistry, Department of Conservative Denstistry, Dental College

QUALIFICATIONS — ESSENTIAL

M D S. (Operative)

Note for S.No. 25 & 26 :

In case the candidates having M D S with the above speciality are not available, the candidates having B D S may be considered

C. FACULTY OF ENGINEERING & TECHNOLOGY

27 Professor of Applied Chemistry (Soil Chemistry/Physical Chemistry), Department of Applied Chemistry

QUALIFICATIONS — ESSENTIAL

(i) Ph D Degree with first class M Sc in appropriate branch (ii) Ten years experience in teaching/industry/Research out of which five years must be at the level of Associate Professor or equivalent

NOTE : Candidates from industry/profession with recognised professional work of high standard recognised at National/International level equivalent to doctorate would also be eligible

28 Lecturers in Applied Chemistry, Department of Applied Chemistry

QUALIFICATIONS — ESSENTIAL

First class Master's degree in appropriate branch of study

DESIRABLE

A) Ph D in Chemistry

B) Research experience in the field of Applied Chemistry

D. FACULTY OF UNANI MEDICINE

29 Professor of Hifzane-Sehat-Wa-Tibbi Samaji, Department of Hifzane-Sehat-Wa-Tibbi Samaji

QUALIFICATIONS — ESSENTIAL

i) Degree/Diploma in Unani Medicine from a University established by law or a Statutory Board/Faculty/Examining Body of Indian Medicine or equivalent and included in IInd Schedule of Indian Medicine Central Act, 1970

ii) Teaching experience in a recognised Institute for ten years in the discipline

iii) Postgraduate qualification in the discipline from the recognised Institution/University established by law

iv) Original published papers/books on the subject

NOTE : In case the candidates having postgraduate qualifications are not available, the candidates should possess 13 years experience in the discipline

30 Reader in Jarahat, Department of Jarahat

QUALIFICATIONS — ESSENTIAL

M S (General Surgery) or its equivalent

At least five years experience in the field

Desirable :

Knowledge of Arabic/Urdu

Published work

Experience of Hospital Administration

31. Lecturers in Hifzane Sehat-Wa-Tibbi-Samaji, Department of Hifzane Sehat-Wa-Tibbi-Samaji.

QUALIFICTIONS — ESSENTIAL

i) Degree/Diploma in Unani Medicine from an University established by law or a statutory Board/Faculty/Examining Body of Indian Medicine or equivalent and included in IInd schedule of Indian Medicine Central Council Act, 1970

ii) Postgraduate qualification in the discipline from the recognised Institution/University established by law.

iii) Original published papers/books on the subject

Note : Those who have applied in response to earlier Advt No 1-A/97-98 dated 01 05 1997 need not apply again They will be considered on the basis of their previous applications if found eligible

D. FINANCE & ACCOUNTS DEPARTMENT

32 Deputy Finance Officers

Scale of pay Rs 3700-5700 plus allowances

QUALIFICATIONS — ESSENTIAL

1) A Postgraduate degree with atleast 55% marks or its equivalent grade

2) Eight years experience as a Lecturer in a College or University with experience in educational administration

OR

Comparable experience in research establishment and other institutions of higher education

OR

Eight years Administrative experience as Assistant Finance officer carrying a scale of Rs 2200-4000

Desirable :

i) M B A /M Com with exposure to computerised accounting in a University or Educational Institution of repute

ii) Persons desirious of appointment on deputation may also apply specifying this fact

33 Assistant Finance Officers

Scale of pay Rs 2200-4000 plus allowances

QUALIFICATIONS — ESSENTIAL

1) A postgraduate degree with at least 55% marks or its equivalent grade

2) Five years administrative experience as Section Officer (Accounts) or in a equivalent post, in any academic institutions/Government Office/Public undertaking

Desirable

i) M.B A /M.Com with exposure to computerised accounting in a University or Educational Institute of repute

ii) Persons desirous of appointment on deputation may also apply specifying *this fact*

F. MAULANA AZAD LIBRARY

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OR

Ph D or research work of an equally high standard and a good academic record with atleast a second class (C in the seven point scale) Master's degree in a relevant subject Relaxation possible as per University norms

Prescribed application forms with instructions may be had either

a) Personally from the Reception Counter, Administrative Block, AMU on production of Cash receipt for Rs 25/- issued by the Cash Section, Finance Office, A M U , Aligarh, or

b) By Post from the Assistant Registrar (Selection Committees), Aligarh Muslim University, Aligarh-202 002, by sending a written request (mentioning the post, Advertisement number and date) with a self addressed stamped Rs 4/- envelope of 9"x4" size and a Demand Draft/IPO for Rs 25/- payable to the Finance Officer, Aligarh Muslim University, Aligarh-202 002 The cover should be superscribed, on the top left with 'Request For Employment Form'

Complete application form alongwith Cash receipt/Demand Draft/IPO for Rs 125/- (non-refundable application fee) payable to the Finance Officer, AMU, Aligarh procured in the above manner may either be delivered personally or sent by Post, superscribing on the top left of the cover the post applied for, advertisement number and date, to the Assistant Regis-

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FELLOWSHIPS FOR 1998-99

Applications are invited for the award of Senior Fellowships, General Felloships, Junior Research Fellowships, Short Term Fellowships, Residential Felloships and Fellowships for Preparing Learning Material from the eligible Scholars

Details of the Fellowships and the application forms can be obtained by sending a self-addressed Rs 6 00 stamped, 25 cm x 11 cm envelope to the **Programme Officer** on or before January 31, 1998 The completed applications should reach by February 20, 1998 The Council reserves the right to consider the name of any person for the award of a fellowship even though he/she may not have applied

davp 936(4)97

trar (Selection Committees), Aligarh Muslim University, Aligarh-202 002, so as to reach him by **31.01.1998.**

IMPORTANT NOTE :

Applications received late or without necessary supporting documents or not accompnied by full prescribed fee or not submitted in the prescribed form shall be rejected summarily

Dr. H.A.S. Jafri
REGISTRAR

DAYANAND EDUCATION SOCIETY, LATUR (Maha.)

WANTED

Applications are invited from qualified persons for following posts, Lecturer in Dayanand Science College, Latur (Maharashtra)

1 Inorganic Chemistry (Reserved for SC Ladies) 1 post

2 Industrial Chemistry (Reserved for ST) 1 post

Qualification : M Sc in the Subject Good academic record with at least 55% marks Passed NET/SET Examination

Pay Scale : As per U G C

Apply **within 15 days** of this Advertisement with full Bio-data, attested copies of Qualification, Experience, Caste etc to the President/Secretary, Dayanand Education Society C/O Principal, Science-College, Latur (Maharashtra)

PRINCIPAL

GUJARAT VIDYAPITH
AHMEDABAD-380 014

Applications for the post of Development Officer (3700-5700) invited on or before **24-1-'98.**

Qualifications : Post-graduate with 55% marks and minimum eight years experience of Accounts/Administration or academic Preference will be given to the candidates having P G in Commerce subject & having Accounting/ Administrative experience in the Institution of Higher Education Application form can be had by paying cash Rs 5/- or by M O Rs 7/-

ACTING REGISTRAR

GURU JAMBHESHWAR UNIVERSITY, HISAR
Advertisement No. 6/97

Applications on prescribed form obtainable from the office of the Dy Registrar (Estt), Guru Jambheshwar University, Hisar-125 001 on payment of Rs 50/- in cash on counter or through Demand Draft in favour of the Dy Registrar (Accounts) accompanied by a self addressed envelope 9"x4" duly stamped for Rs 14/- for the following posts, are invited so as to reach the Dy Registrar (Estt) **latest by 31st Jan., 1998.**

1 Controller of Examinations-1 (Rs 4100-5300)

2 Director of Sports-1 (Rs 3700-5700)

3 Placement Officer-1 (Rs 3700-5700+400 SP)

4 Secretary to Vice-Chancellor-1 (Rs. 3700-5000+400 SP) (In Dy Registrar's grade/ cadre interchangeable)

5 Dy Registrar-2 (Rs 3700-5000+400 SP)

6 Director Youth & Cultural Activities-1 (Rs. 3700-5700)

7. System Manager-1 (Rs 3000-5000)

8 Training & Placement Officer-1 (Rs 2200-4000)

9. Coach (Judo)-1 (Rs 2200-4000)

The qualifications and experience for above posts shall be available with the prescribed application forms

The application fee to be remitted only through Bank Draft in favour of the Dy Registrar (A/cs) Guru Jambheshwar University, Hisar is Rs 200/- for post at Sr No 1 and Rs 150/- for the posts at Sr No 2 to 6 and Rs 100/- for all other posts. However, the SC and ST candidates are exempted from the payment of application fee Those in employment must send their applications through proper channel Applications not received on prescribed form, without certified copies of testimonials, photographs, fee and other documents or received after the last date are liable to be rejected Four self-addressed slips must be attached with the application form

REGISTRAR

RAJAGIRI COLLEGE OF SOCIAL SCIENCES
KALAMASSERY, KERALA-683 104

Invites applications for the vacancy of LECTURER IN SOCIAL WORK

Eligibility : MSW or equivalent qualification from a recognised University

VACANCIES : LEAVE VACANCY (General)

Pay : UGC Scales as per the norms of the State Government

SELECTION : Subject to UGC regulations

Application form and other details can be obtained from the College Office on payment of Rs 200/- in cash or by sending a Bank Draft for Rs 220/- in favour of the Principal, payable at Ernakulam Filled in application should reach the office **within one month** from the date of appearance of this notification.

MANAGER

M.O.C. COLLEGES
DEVALOKAM, KOTTAYAM

WANTED

Applications in prescribed forms are invited for the post of Principals in colleges under the Educational Agency of Malankara Orthodox Syrian Church — one under Calicut University, the other under Mahatma Gandhi University

Holders of posts of Senior Lecturers Selection Grade or Readers in Colleges may apply in forms that can be had from the undersigned at Rs 150/155 (by post) **within one month** from the date of this notification

Kottayam
22.12.1997 **SECRETARY**

A.E.S. COLLEGE
HINGOLI-431 513
DIST. PARBHANI.

WANTED

Applications are invited from the eligible candidates for the following vacancies in the SENIOR COLLEGE (GRANTED) run by ADARSH EDUCATION SOCIETY HINGOLI The application duly completed in all respect should reach **within 15 Days** from the date of publication of the advertisement on the address given above

1 Lecturer in Zoology, Two posts, 1) One Full Time — Open (Lien Vacancy), and 2) One Full Time (ST)

Educational Qualification : M Sc in the relevant subject with at least 55% marks or its equivlent grade and academic record Besides above qualification, he should have cleared SET or NET Examination

Pay Scale : Pay Scale and other allowances as per the State Govt and S.R T M University rule

Note : 1) Eligible candidates should submit their applications through proper channel

2) No T A /D A will be paid for attending the interview

3) Application be attached with Zerox Copies of S.S C , Degree Certificates, Marks Memo, Caste & Character etc

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INTERNATIONAL SEMINAR ON RESEARCHES IN LEARNING ORGANIZATION, COMMUNITY PARTICIPATION AND SCHOOL EFFECTIVENESS AT THE PRIMARY STAGE

JULY 15-17, 1998

THEME : LEARNING ORGANIZATION, COMMUNITY PARTICIPATION AND SCHOOL EFFECTIVENESS

SUB THEMES : — ***LEARNING ORGANISATION :***

- — Organisation of learning in multigrade/multilevel situations
- — Strategies of learning in multicultural classrooms
- — Management of learning in large-sized classes
- — Organisation of learning for children with special needs
- — School Climate and interpersonal relations
- — School planning and management
- — Alternative approaches to curriculum
- — Case studies

— ***COMMUNITY PARTICIPATION :***

- — Community and school management
- — Community and resource mobilization
- — Panchayati Raj institutions and primary education
- — Parent-teacher relationship
- — Case studies

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ABSTRACT : — 300 to 500 words, typed on A-4 size paper in double space should reach the NCERT at the contact address by February 27, 1998 giving information on the following points :

Title, Methodology, Major Outcomes, Implication of findings for school effectiveness, Time period of the study when conducted, Whether published, Full name of the investigator, institutional affiliation, address for correspondence, phone no., fax no, e-mail address and any other relevant information.

PRESENTATION : — Authors of the selected abstracts will be invited regionwise to make presentation of their full paper in the regional seminars which the NCERT will be organising at Ajmer, Bhopal, Bhubaneswar and Mysore in the month of April, 1998 These regional seminars will act as a filter for selecting promising papers for the International Seminar.

— Foreign authors will, however, be exempted from participating in the regional seminar

FULL PAPER : — submitted by May 15th, 1998 not exceeding 4000 words.

CONTACT ADDRESS

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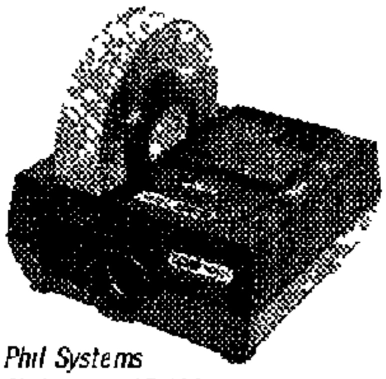

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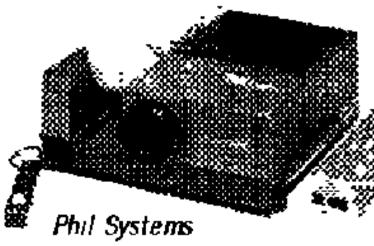

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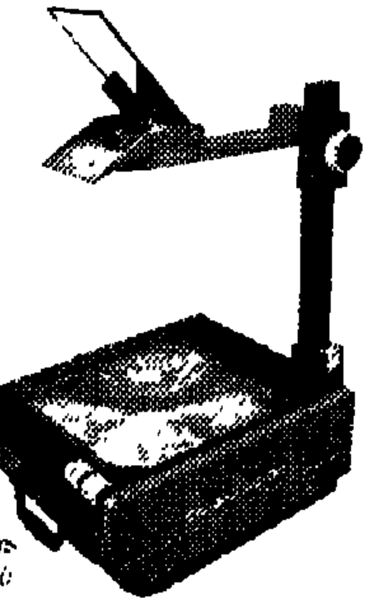

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